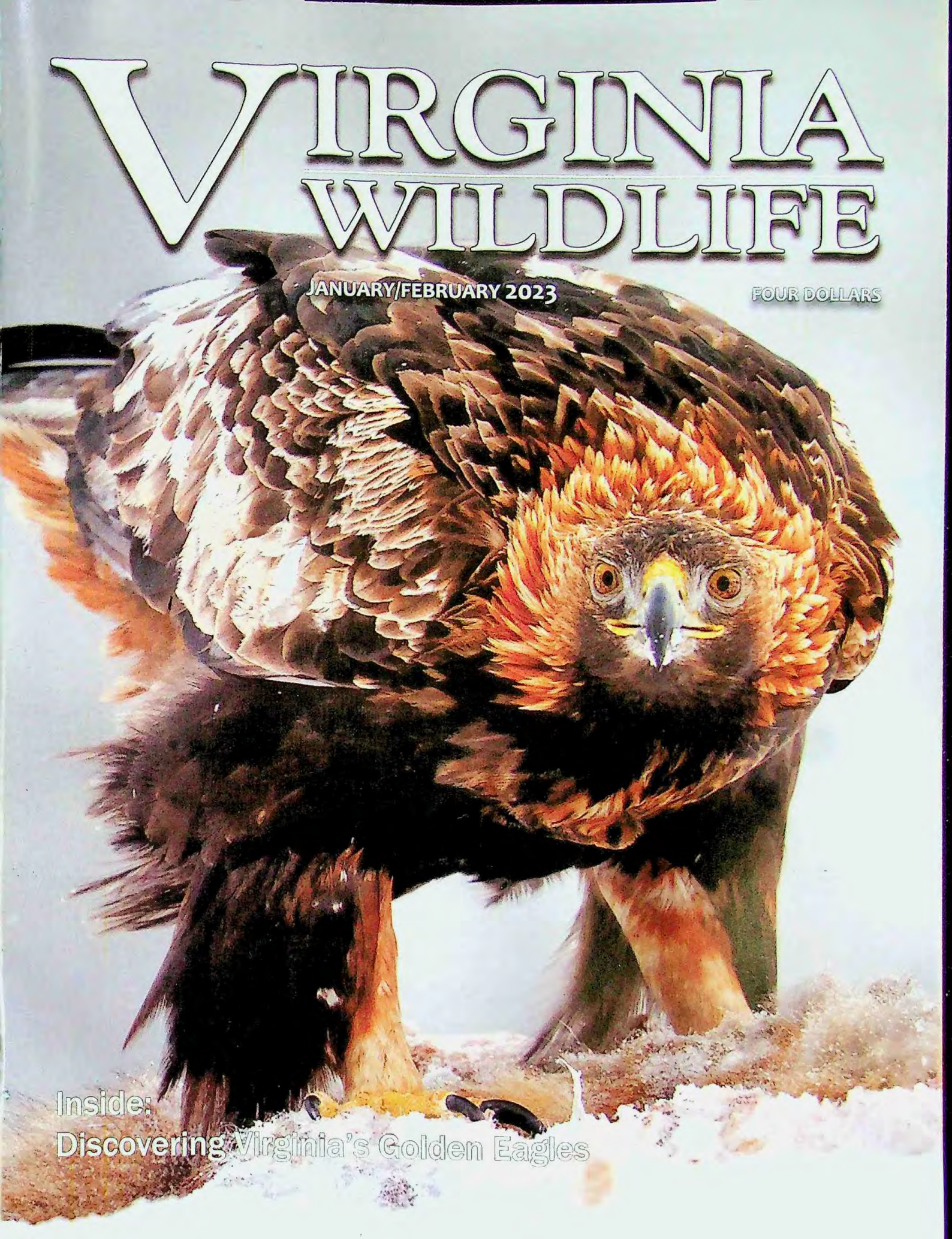
# VIRGINIA WILDLIFE

JANUARY/FEBRUARY 2023

FOUR DOLLARS



Inside:
Discovering Virginia's Golden Eagles

# VIRGINIA WILDLIFE

JANUARY/FEBRUARY 2023
VOL. 84, NO. 1

## FEATURES

6 **Discovering Virginia's Golden Eagles**
By Molly Kirk/DWR
In just 14 years, the golden eagle has gone from virtually unknown in Virginia to a species with a vast amount of data to inform future management decisions.

12 **Check Your Heart**
By Josiah Donaldson
Even a frigid day that ends empty-handed is a great one when the ducks fly.

16 **Saving the Hidden Fish**
By Loughran Cabe
Meet the nonprofit working to help safeguard Virginia's freshwater legacy.

26 **The Incredible Journeys of High-Mileage Great Blue Herons**
By Curtis Badger
Some of these awkwardly elegant birds are resident to Virginia, but some are just passing through.

32 **Communicating About Conservation: What's in it For Me?**
By Beth Hester
Building support for conservation among diverse interest groups requires good storytelling and great messages about why the science matters.

## DEPARTMENTS

5 From Our Readers • 24 Enjoy the Great Outdoors
30 Kids 'N Fishing Winners • 36 Working for Wildlife • 38 Photo Tips
40 A Walk in the Woods • 41 Fare Game • 42 Living Habitats
43 Good Reads • 44 Recognizing 50 Years of Freelancing • 45 Out & About

Cover: A golden eagle stands over prey in winter, see page 6. ©Shutterstock
Left: A great blue heron snatches a fish, see page 26. ©Justin Ross
Back cover: A candy darter in a Virginia stream, see page 16. ©Loughran Cabe

RYAN J. BROWN
Executive Director

Even today, there remains much to learn about wildlife. Molly Kirk's article, "Discovering Virginia's Golden Eagles," (p. 6) featuring the work of Virginia Department of Wildlife Resources (DWR) biologist Jeff Cooper, illustrates how new discoveries continue to be made in Virginia and elsewhere. Truly, one of the great aspects of the wildlife conservation profession is that it's a never-ending frontier of mystery and wonder.

Jeff's work is also itself representative of the roles of our biologists and other conservation professionals who spend their careers studying and promoting our wildlife and the recreational opportunities that surround them. As you read the article, the thought of spending days in snow and cold weather waiting in a blind for a golden eagle to appear may not sound the most appealing to you, but that's what it took to gain information valuable to us here in Virginia and to help inform study of this magnificent species on a broader scale.

Fortunately, this is the type of work that wildlife professionals are not only willing to undertake, but in fact dedicate their careers to the pursuit of. I am always struck by the passion of our staff and those of other fish and wildlife agencies for what they do—wildlife conservation is a vocation in the truest sense. Along with that passion comes a willingness, even enthusiasm, to do whatever is necessary to achieve the next goal or to make the next discovery to inform our management efforts and policies. And somehow, in a working world otherwise consumed with instant gratification via rapid-fire email responses, virtual meetings, and the like, there is something poetic about our wildlife defying human expectations and demanding that we meet on its terms, revealing the knowledge we seek only when we have put in the time and solved the latest of an eternal series of puzzles that it holds for us.

If you are reading this column, there's a good chance you are a part of this cause as well. You may already be aware that, somewhat peculiar among government agencies, state fish and wildlife agencies (including DWR) are predominantly funded not by general tax dollars, but by monies either derived directly from license sales and boat registrations or secondarily passed on from state and federal sources tied to public expenditures on equipment used in the recreational activities that our constituencies participate in. Each time that you prepare for your next outdoor adventure, it's likely that you are in some way contributing to this conservation funding effort. Subscriptions to this magazine fund DWR work. Therefore, all of the great work that our staff accomplishes comes with a need for thanks to you for your support, (and we'll just leave the camping in five-degree weather to Jeff and his contemporaries).

I hope that this issue of *Virginia Wildlife* finds you having enjoyed a fall season in the field in whatever manner you chose to partake in it, staying warm through the winter months, and looking forward to the return of spring coming up!

CONSERVE. CONNECT. PROTECT

MISSION STATEMENT

Conserve and manage wildlife populations and habitat for the benefit of present and future generations. Connect people to Virginia's outdoors through boating, education, fishing, hunting, trapping, wildlife viewing and other wildlife-related activities. Protect people and property by promoting safe outdoor experiences and managing human-wildlife conflicts.


COMMONWEALTH OF VIRGINIA

**Glenn Youngkin, Governor**

SECRETARY OF NATURAL RESOURCES
**Travis Voyles**

DEPARTMENT OF WILDLIFE RESOURCES
**Ryan J. Brown, Executive Director**

HUNTING & FISHING LICENSE FEES
Subsidized this publication

MEMBERS OF THE BOARD
G.K. Washington, Chair, Dillwyn
Tom Sadler, Vice Chair, Verona
Leon Boyd, Vansant
Catherine H. Claiborne, Richmond
Jon Cooper, Botetourt
John W. Daniel II, Richmond
Michael Formica, McLean
Tammy Jo Franklin, Big Stone Gap
Mamie A. Parker, PhD, Dulles
George J. Terwilliger, Delaplane
Brian Vincent, Farmville

MAGAZINE STAFF
Editor: Molly Kirk
Art Director: Lynda Richardson
Staff Contributors: Jeff Cooper, J. D. Kleopfer, Stephen Living, Meghan Marchetti, Mike Pinder, Meagan Thomas



Printing by Progress Printing Plus, Lynchburg, VA



Copyright 2023 by the Virginia Department of Wildlife Resources. All rights reserved.



Virginia Wildlife (ISSN 0042 6792) is published bimonthly by the Virginia Department of Wildlife Resources. Send all subscription orders and address changes to Virginia Wildlife, PO Box 2042, Williamsport, PA 17703. Address all other communications concerning this publication to Virginia Wildlife, P. O. Box 90778, Henrico, Virginia 23228-0778. Subscription rates are $12.95 for one year, $23.95 for two years; $4.00 per each back issue, subject to availability. The Canadian rate is $24.95 for one year and $35.95 for two years, payable in U.S. funds. No refunds for amounts less than $10.00. To subscribe, call toll-free **(800)710-9369.**



This publication is intended for general informational purposes only and every effort has been made to ensure its accuracy. The information contained herein does not serve as a legal representation of fish and wildlife laws or regulations. The Virginia Department of Wildlife Resources does not assume responsibility for any change in dates, regulations, or information that may occur after publication.

The Virginia Department of Wildlife Resources shall afford to all persons an equal access to Department programs and facilities without regard to race, color, religion, disability, national origin, sexual orientation, gender identity, age, political affiliation, or veteran's status. If you believe that you have been discriminated against in any program, activity or facility, please write to: Virginia Department of Wildlife Resources, Attn: Executive Director's Office, P. O. Box 90778, Henrico, VA 23228.


**www.virginiawildlife.gov**

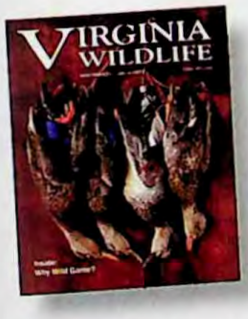

MIX
Paper from responsible sources
FSC® C136390

# From Our Readers

**Beautiful Day on the Jackson**

Didn't catch a trout, but got the hang of casting. We drove up from New Orleans for fishing and a visit with my grandson. Couldn't have been a more beautiful river to fish! The Jackson River in fall is a superb way to spend a day. Thanks for your hard work keeping it this way.

*Randal Pick, New Orleans, Louisiana*




**Wrong Duck!**

Dear Editor, I love the magazine, but I think the correct lineup on the [November/December 2022] cover should be male American black duck, female American black duck, and the gadwalls are O.K. Thank you!

*Henry T. Armistead, Philadelphia, Pennsylvania*

*Yes, it is an error. The far left is a male black duck next to a female black duck; the gadwall are correct. The black duck is darker in color, with one white line below speculum (purple color on wing). The confusion probably came because the male black duck is actually a mallard/black duck hybrid, as it has two white lines above and below the speculum. You can even see a slight hint of green on his head. Male and female black ducks are distinguished by bill color—males with a solid yellow-colored bill and females with an olive green, mottled (not solid)-colored bill.*

*- Ben Lewis, DWR waterfowl biologist*

**How Big?**

I found the article ["Fantastic Fungus"] in your September/October 2022 issue really interesting with great photos. However, I would have liked an idea of size on all of them, not only on a couple of them. Regards,

*Wumf Shukay, Woodbridge, Virginia*

*Good point! If we do something similar in the future, we'll make sure to include size information for all the species.*

*- Molly Kirk, editor*

**We'll Miss Luke**

"Off the Leash – Farewell from Luke" [in the November/December 2022 issue] made the tears flow. He will be greatly missed. I loved your ending of this last column. Thank you for your stories of your wonderful adventures.

*Barbara Teeple, Scottsville, Virginia*

## On Our Website...

**Work Hard and Try To Do the Right Thing: Matt Knox Reflects on Decades of Deer Management**

After 30 years as the DWR Deer Project Leader, Matt Knox is retiring, so we asked him to reflect on his time at DWR.

*virginiawildlife.gov/blog/work-hard-and-try-to-do-the-right-thing-matt-knox-reflects-on-decades-of-deer-management/*

**Smith River Sampling Seeks Out Native, Non-Game Fish and Young Brown Trout**

Ever wonder what goes into a day of sampling fish populations? A DWR volunteer blogs about three days spent sampling on the Smith River that targeted non-game fish and juvenile brown trout, but also showed an encouraging picture of the fish populations.

*virginiawildlife.gov/blog/smith-river-sampling-seeks-out-native-non-game-fish-and-young-brown-trout/*

**We want to hear from you!** We welcome letters to the editor, questions for our staff, photos you capture of wildlife, and experiences you want to share. Please include your name and address when you send correspondence to editor@dwr.virginia.gov via email or by mail to Editor, Virginia Wildlife, P.O. Box 90778, Henrico, VA 23228-0778. Correspondence chosen for publication may be edited for clarity and/or length.

## Connect with Us!

Discovering Virginia's

# GOLDEN EAGLES

*In just 14 years, the golden eagle has gone from virtually unknown in Virginia to a species with a vast amount of data to inform future management decisions.*

By Molly Kirk/DWR

Wildlife biologist Jeff Cooper distinctly remembers when his supervisor suggested studying golden eagles in the mountains of western Virginia. "I thought it would be a waste of time. I thought golden eagles were just vagrants that showed up occasionally in Virginia," said Cooper, the non-game bird project coordinator for the Virginia Department of Wildlife Resources (DWR).

"There were guys at Clinch Mountain Wildlife Management Area [in Smyth County, Virginia] who had been reporting seeing these birds for years, just watching them. I thought they didn't know what they were talking about and they were misidentifying the species," Cooper recalled. "But they were right!"

In the last months of 2009, Cooper set out some deer carcasses on high-elevation ridgelines in western Virginia and trained trail cameras on them. And lo and behold, images of golden eagles showed up on the trail cameras when he checked them.

"I was totally blown away. What I thought was true was that these birds were vagrants in Virginia, we weren't getting involved in this project, and it was a waste of time," Cooper recalled. "Fortunately my boss, Ray Fernald, pushed me in a direction I didn't want to go. And it turns out that golden eagles are a significant resource right here in Virginia and throughout the central Appalachian mountains.

"That's the thing that was a little dumbfounding at the time, and still kind of is," Cooper continued. "I could take you to Walker Mountain in Bath County, and you could literally catch an eagle a day on those baited sites, but we could sit up there for a week without the baited sites and never see an eagle on those mountaintops. They're somewhat cryptic, because they're in the woods, or they're flying high above the ridgelines with obscured fields of view."

During the 2010s, Cooper and his team trapped dozens of golden eagles and outfitted them with GPS transmitters affixed to a backpack harness. The devices collected data on the location of individual birds at 15-minute intervals during the winter and summer months, and as frequently as every 30 seconds during migration in the spring and fall. The data got transferred over the cell phone network and back to biologists, who can then calculate the size of individual winter home ranges and breeding territories and characterize habitat use patterns.

Left: A golden eagle holds its prey during a winter storm.

©Shutterstock

The birds trapped and equipped with transmitters in Virginia provided a significant amount of data that not only shed light on the species' behavior, but also is shaping management decisions about the species. Blood samples taken from captured golden eagles were also essential for a study on lead poisoning in the U.S. eagle population.

A trailcam photograph of a golden eagle at Walker Mountain in the Jefferson National Forest.

## Uncovering the Patterns

Cooper wasn't alone in not knowing much about the golden eagle in Virginia in 2009. Golden eagles are a well-known, much-studied, and somewhat abundant species in western North America, from Alaska south to Central Mexico. However, prior to the work started in Virginia, not much was known about the species east of the Mississippi.

Thanks to the efforts of Cooper and other biologists and wildlife managers that are part of the Eastern Golden Eagle Working Group (EGEWG), data now exist of the smaller, geographically isolated, and potentially distinct population that breeds in northeastern Canada. These birds migrate through the central Appalachians of New York and Pennsylvania to winter in Virginia, West Virginia, and neighboring states. Its winter range in Virginia is primarily associated with the Appalachians, although some birds may also be found in the Coastal Plain and records exist for the Piedmont.

Cooper and his team trapped and attached transmitters to more than 35 golden eagles between 2009 and 2013—about a third of all the birds captured for the EGEWG's data collection. "Jeff contributed a big sample size to our data set," said Tricia Miller, Ph.D., executive director and senior research wildlife biologist at Conservation Science Global and part of the EGEWG. "The information gained has been incredible, because what was known about golden eagles even in 2009 was limited. Getting the telemetry data showed us how these birds were behaving, the places they were living, where they were flying—things that were basically unknown about the wintering population."

> *"The information gained has been incredible, because what was known about golden eagles even in 2009 was limited."* - Tricia Miller

Golden eagles wintering in the west of North America use open and semi-open habitat to primarily hunt mammalian prey. But the eastern population that winters in the Appalachian Mountains behaves quite differently. "These birds are incredibly difficult to see, especially during winter," Miller said. "You can go to any ridge or mountaintop in late October through November, and you can see them migrating, but once they're in their wintering grounds, they tend to be out of sight because they're often in forested, high-elevation areas that are generally far from people, especially during winter. The data collected in Virginia were very helpful to inform about their range and behavior while wintering."

## Cold and With Talons

It's a daunting task to capture a golden eagle. The species is one of the largest birds in North America, with a typical wingspan of 6 to 7 feet, and fearsome talons. Cooper and his team were attempting to do so in bitter cold and at isolated, high-elevation sites. "The elements and the mountains are their own challenge. It was cold!" Cooper said. "One winter in Highland County, there was 2 ½ feet of snow with

©Michael Lanzone

Golden eagles are very hard to spot while they're wintering in forested mountain areas.

Jeff Cooper/DWR

Golden eagle talons are sharp and powerful, so DWR staff capturing the birds had to take care to protect themselves and the eagles.

a high of 5 degrees." There's no way to sleep comfortably in a hotel room and be on the snowy mountaintop at dawn to trap an eagle, so Cooper and those helping him would camp and sleep on the mountain for days at a time. They'd drive as far as they could, then take a four-wheeler to the camp site.

Golden eagles are skittish and wary, so Cooper would have to set up the bait (a road-killed deer carcass) and the trapping equipment with a trail camera monitoring it first. Once he saw regular golden eagle visits to the site happening on the camera, they'd place a portable deer blind about 20 yards away, sneak into it before sunrise, get into sleeping bags for warmth, and wait for the birds. "Sometimes it would be just like clockwork and easy, and they'd just come in and you could catch them," Cooper said. "Then there were times we waited for days and nothing came."

Cooper and his team used rocket nets to trap the golden eagles, a 60' by 40' net that's folded accordion-style and laid on the ground. Three rockets with small explosive charges were attached to the net, with blasting wire that ran to the deer blind. The team would place the deer carcass and netting strategically. "Golden eagles like to feed standing on the animal, so when we prepared the bait, we'd open up the backstrap and have it facing the net, so the eagle was forced to have his head down facing the net," Cooper recalled. "We'd let them feed for a bit, and when their head was down, we'd detonate the rockets, which would carry the net over the bird. On a few occasions, they were quick enough to fly out of the net, but in most cases, they weren't."

The team would have to work quickly and carefully while handling the birds. "The defensive posture of an eagle is to flop over on their back and try and attack you with their feet. Their feet are so powerful and they try to grab you, so it usually takes a couple of people to get their feet untangled and under control," Cooper said. "We put a hood on the animal and gave the eagle a ball of [adhesive bandage] to grip with its feet so it didn't injure itself with its talons. We'd wrap the feet up so we didn't get injured.

"Then we'd go through the banding process with a U.S. Geological Survey (USGS) bird banding lab band. We took blood samples for lead and genetic analyses and to genetically sex the bird. We would take our measurements, then we would outfit the animal with a transmitter on its back, attached with a Teflon strap that we would put across its breast and under its wings, like a backpack. That takes a couple of people to do. Then we'd take the protective equipment off and let the bird go. It was a tremendous amount of work. Actually catching the bird was the easy part, but all the logistics and equipment and gear was complicated," Cooper recalled.

Cooper makes sure to credit the immense amount of support he had for the project from the DWR Lands and Access staff, DWR district biologists, the U.S. Forest Service, and

supervisory and administrative staff at DWR. Cooper is also appreciative of the guidance, mentorship, and hard work of Miller, Todd Katzner, Mike Lanzone, and Dave Kramar, Ph.D, on the project. "The most satisfying part professionally was this data set, but also the personal relationships I developed both within and outside the agency," he said. "It was humbling to see how talented and smart all these people in DWR and our partners are."

*"It's limitless what can be done with the data we've collected."* – Tricia Miller

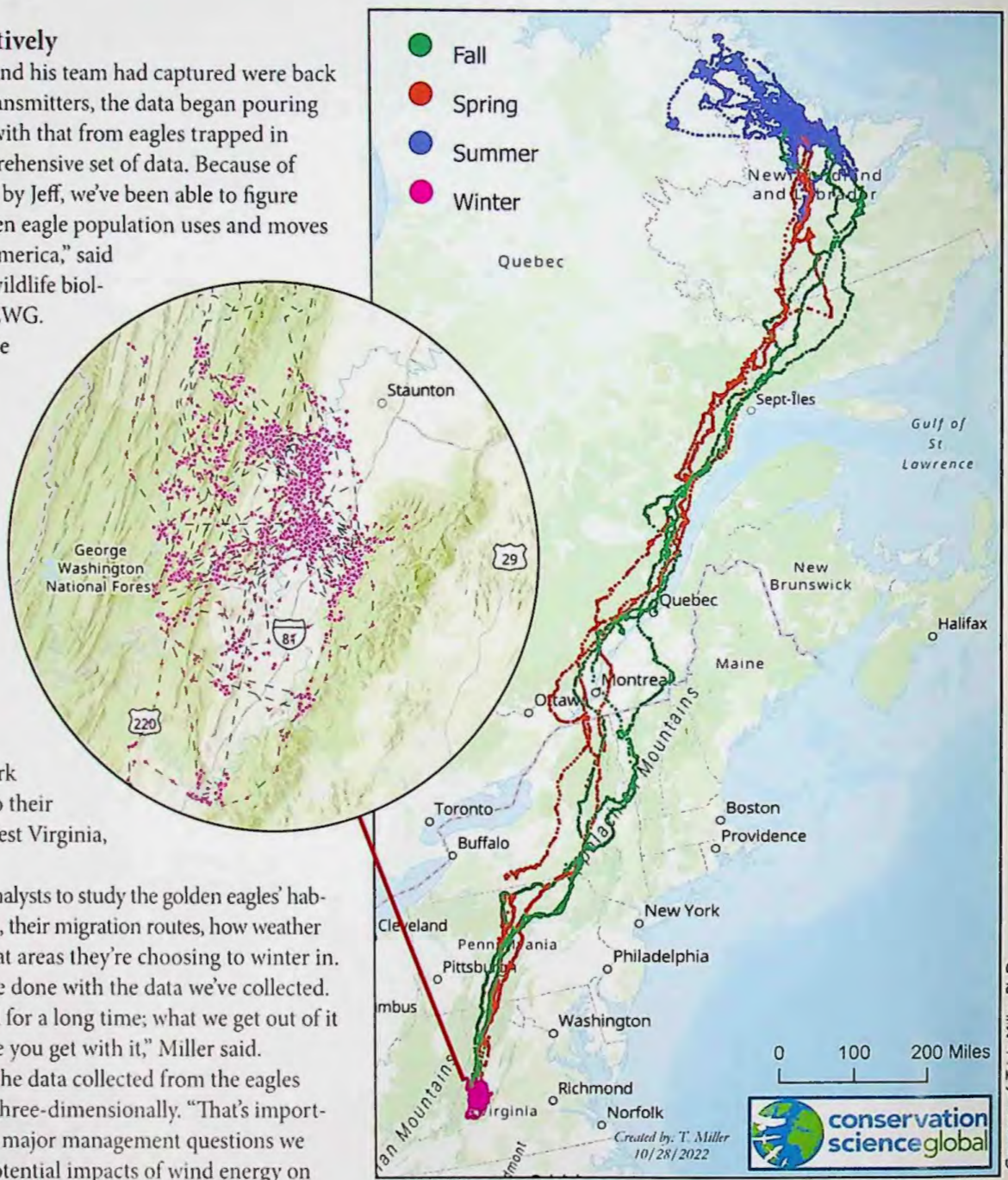
## Using the Data Creatively

Once the eagles Cooper and his team had captured were back flying with their active transmitters, the data began pouring into the EGEWG, along with that from eagles trapped in other states. "It is a comprehensive set of data. Because of the work done, including by Jeff, we've been able to figure out how the eastern golden eagle population uses and moves through eastern North America," said Katzner, Ph.D., a USGS wildlife biologist and part of the EGEWG.

"There wasn't a whole lot known about this population, especially their broad spatial movements, before the project got going," Katzner said. Now biologists can track eastern golden eagles' movements from breeding grounds in northeastern Canada, along their migration through the central Appalachians of New York and Pennsylvania, and to their wintering in Virginia, West Virginia, and neighboring states.

The data set allows analysts to study the golden eagles' habitat and resource selection, their migration routes, how weather influences them, and what areas they're choosing to winter in. "It's limitless what can be done with the data we've collected. These data will be useful for a long time; what we get out of it depends on how creative you get with it," Miller said.

Cooper noted that the data collected from the eagles shows their movement three-dimensionally. "That's important because some of the major management questions we had were some of the potential impacts of wind energy on these birds. At the time, there weren't any operational wind farms, so it was one of those rare opportunities where we were able to gather data before there was a management challenge, which was wind energy," he said.




Courtesy of Tricia Miller, Ph.D.

This map shows the movements of an adult golden eagle captured and released by Jeff Cooper at Shilling Access Trail on February 22, 2012. Her transmitter was active until January 2015. The map reveals her wintering range in the Highland County area, migration paths, and her summer range in Labrador.

Miller is currently using the golden eagle telemetry data for a model that will create a heat map of high-, medium-, and low-use eagle areas across their range in Virginia. The footprint of wind energy facilities can be overlaid on the model to estimate if the eagles would potentially be impacted by the wind turbines in the facility.

The blood samples collected from Virginia's golden eagles were also used in research by Vincent Slabe and others that resulted in a paper published in *Science* in February 2022, "Demographic implications of lead poisoning for eagles across North America." The study found unexpectedly high levels of lead in almost half the golden and bald eagles studied. "The national focus on the issue became huge because of that paper," said Katzner.

"There have been many peer-reviewed publications as a result of that initial golden eagle work we started in 2009," Cooper said. "It's been such a team effort with academics, non-government organizations, and federal partners." While the trapping phase of the project is mostly complete, the EGEWG is still very active, working on a golden eagle conservation and management plan both within the United States and in Canada.

"We have this very powerful database that can be used to influence management," Cooper said. "Now the next challenge is synthesizing and analyzing the data, creating these models, and then actually getting the decision-makers to utilize them."

*Molly Kirk is the DWR Creative Content Manager.*

Jeff Cooper/DWR

Jeff Cooper holds a golden eagle equipped with a transmitter before releasing it in the cold mountains of Highland County.

# Check Your Heart

Even a frigid day that ends empty-handed is a great one when the ducks fly.

By Josiah Donaldson

In war planning, it's often said that the enemy gets a vote. In hunting, the animal gets a vote, and the weather gets a vote. And lady luck gets the trump card. That's what gets us out of bed in the morning. Plus, it helps to have an encouraging friend.

"Check your heart!" Andy said on the phone with a distinct Appalachian twang.

It was the gray light of dawn, but I wasn't where I wanted to be. My footsteps crunched on the frozen, red clay of a deserted construction site. It was mid-January and I had gotten up at 3 a.m. to drive to a developed site in North Carolina and mark its utilities while its construction crew had stood down due to weather. It was 15 degrees out and frigid.

It was so cold, in fact, that I had borrowed my camo mittens and fleece face mask I used for duck hunting. I even sacrificed some of my disposable hand warmers and taped them to my paint wand to keep the paint can from freezing. Waterfowl should have been the last thing on my mind, but the biting cold just kept reminding me that I should be on the water somewhere and that what I was doing was "for the birds."

"Bobby is going out on his boat on the James tomorrow. We both took the day off. You in?" Andy asked.

"This is a big job, gonna take me a few days," was my reply.

"Check your heart," my friend repeated.

"I wish. Y'all have fun," I said.

"I'm telling you, they're gonna be on the river. Man, check your heart!" Andy signed off.

## Where Are They?

We both knew that after a couple of teens and single digit nights, the ponds and swamps would be frozen. This would render the middle James River, far above the fall line, a much better prospect than normal for waterfowl. And not just the standard wood ducks and geese—there could be greenheads,

©Mike Ostrander

diver ducks, and more.

Under normal conditions, we call that region "the Badlands" for ducks due to the lack of birds. But under the right conditions, the Badlands could magically transform into Stuttgart, Arkansas (you get my drift, pun intended).

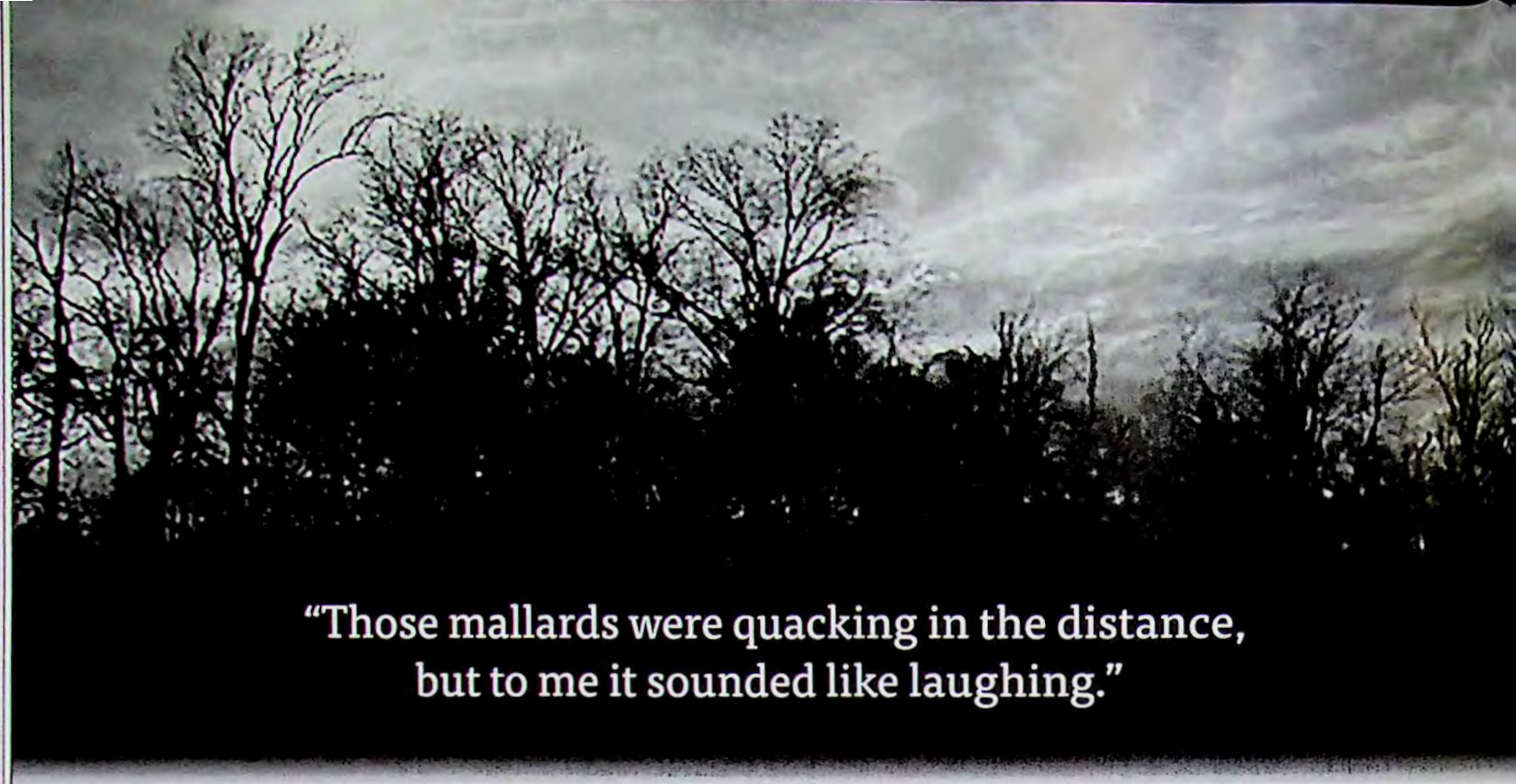
He was right. My heart told me to go duck hunting. I headed back to Virginia.

The next morning, we launched the boat as the dirty water lapped our waders and froze them stiff. It swirled and sloshed as we climbed on board, almost to remind us of its power. The current took us away and we paddled only to keep orientation. We would only use the outboard as necessary on this float.

Our target was an island downstream with a wide sandbar. We kissed the sandbar, threw out decoys, hid the boat, and waited for shooting light. Four big ducks flew over high and chattered, well on their way to lands unknown. Buffleheads zipped the river back and forth out of range, their winding flight feet above the water and the black-and-white markings distinct. After an hour, we decided to pick up and move on for better prospects. The birds weren't flying, so that meant they had to be found.

We drifted downstream at the flooded river's pace, over downed trees and submerged boulders past island after island. The water was frigid and brown, collecting in points behind logs and boulders and making an ugly tan foam, while steam rose from our breath and anywhere the sunbeams struck the water. Andy, Bobby, and I were inexperienced at this, but we were having a grand time talking, eating snacks, and paddling when required.

The landscape and water itself seemed bland, dead, and dull as the morning yielded to midday. We had thought the birds could be found resting on sandbars for an easy jump shoot, but after a couple miles it appeared they just weren't here. Sandbar after empty sandbar caused a depletion of hope and focus.



"Those mallards were quacking in the distance, but to me it sounded like laughing."

## There They Are

We drifted around yet another island with cold, dead willows and drift-logs strewn across it when suddenly two mallards unexpectedly flushed 30 yards ahead. All heck broke loose as surprise gave way to confusion and bewilderment. To someone used to wood ducks, mallards looked like pterodactyls!

The hen gave her characteristic quack alarm call, and the drake gained altitude with whistling wings, his coral red feet and shiny green head distinct against the side-angled sunlight. In the front of the boat, Bobby and Andy both dumped their three shots into the pair for a low percentage shot flying away, but not a feather was touched.

Instantly, this ignited a fireball of 40 mallards that exploded out of the same hidden pocket while our attention was on the first two ducks. The sky was a flash of color, orange feet and blue and white speculum, yellow bills, mottled brown and a mess of dripping water, quacks and whistling wings. I unloaded my gun after the last duck too far away as Bobby and Andy frantically reloaded their guns in the vain chaos a ball of greenheads can cause. Again, not a feather touched.

The boat floated in abject silence as the river kept whispering its timeless song. Those mallards were quacking in the distance, but to me it sounded like laughing. They even circled a few times just to mock us. Man, they really liked that hole. We were all smiles on the boat for seeing that ball of green.

During the course of the day we enjoyed flinging steel at buffleheads too far away and zipping up the river. One shot could cause the water to fly up six, eight, or even 10 feet behind them as they flew. We discovered a lone goose who tried his luck by flushing from a cornfield and flying directly in front of our boat. Andy's Benelli clicked, Bobby's safety was still on, and one of my shells failed to fire. The luckiest goose in Virginia got a free pass. We figured it was time to finally eat the only apple and pair of Pop-Tarts on the boat while visions of those swirling greenheads still danced in our heads.

At the end of our float, we found ducks resting on a pair of well-known islands by the hundreds as crops on both side of the river were being harvested. We hit the beach on the river like the D-Day landings and threw out decoys, but to no avail. The ducks and geese circled and landed in the fields as if we had only caused them a minor inconvenience. The tally for the day was more than 400 ducks and geese spotted, but none harvested, thanks to our inexperience. But nobody was disappointed.

The way back up-river was exhausting and slow, but smiles were on our faces with the experience of a lifetime. Every once in a while the perfect storm of high water, late crops being harvested, and a bitter cold front can once again bring the ducks to the big water of the Badlands. And like any dyed-in-the-wool duck hunter, we'll be looking to the skies, waiting.

---

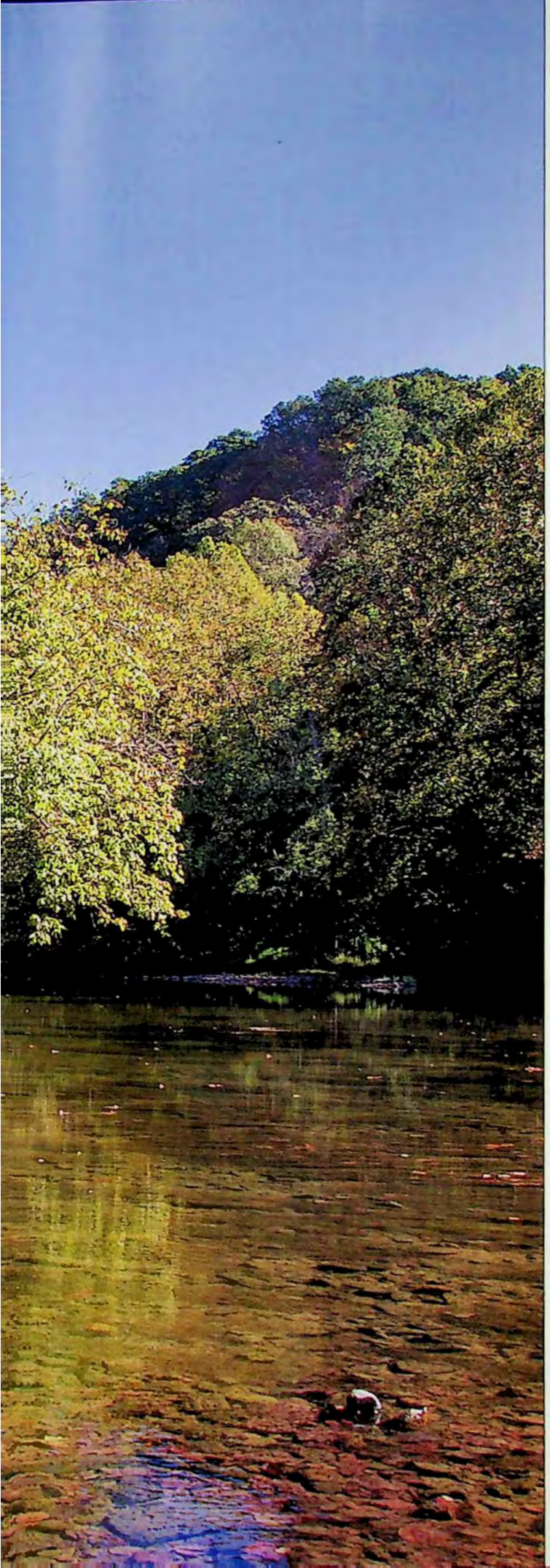
*Josiah Donaldson is an outdoor enthusiast and teacher from central Virginia who believes in catching as many sunrises as possible.*

©Mike Ostrander

©Shutterstock

# Saving the Hidden Fish

©Loughran Cabe



Meghan Marchetti/DWR

# Meet the nonprofit working to help safeguard Virginia's freshwater legacy.

By Loughran Cabe

One May day, I took my snorkel and mask and spent an afternoon exploring a mountain stream in southwest Virginia. That day, I saw some of the most spectacular sights of my life—not scenic waterfalls or breathtaking vistas, but native fish below the surface.

Among the boulders and riffles, neon-colored fish sparred over territory, flashing electric blues, bright oranges, and bold harlequin patterns. The species I came across that day was the candy darter (*Etheostoma osburni*), a strikingly beautiful species that would look more in place on a coral reef than in our streams. It is just one species of non-game fish in the commonwealth.

Virginia is home to more than 200 species of freshwater fish, many brilliantly colored like the candy darter. From crimson to emerald to cadmium yellow, our backyard streams are full of color and diversity, embodied by dace, darters, shiners, and others, each having evolved to fill a certain niche in the confines of our waterways.

Unfortunately, many of these freshwater treasures are in danger, including the candy darter. Freshwater fish around the world are imperiled due to habitat loss and alteration, warming waters, pollution, and the introduction of invasive species. One reason for this is that freshwater species are often highly endemic to, or only found in, specific river drainages or even specific streams. Despite the commonwealth's impressive diversity, few have seen or even heard of many of the non-sport fish found in the region, as they are rarely conspicuous, often difficult to identify, and, of course, rarely caught on a hook and line.

With such a lack of mainstream attention, and so many threats, it's obvious that our fish are in need of help. In addition to organizations and agencies, such as the Virginia Department of Wildlife Resources (DWR), that focus on water quality and aquatic habitat improvement, one organization is working to help restore threatened fish populations: Conservation Fisheries, Inc. (CFI).

CFI is a captive propagation hatchery in Knoxville, Tennessee, where they have developed techniques to propagate more than 75 non-game fish, including some of the most imperiled species in the southeastern United States. CFI works

The Clinch River is home to many species of non-game freshwater fish, such as candy darters (*shown in inset*).

with DWR and other state wildlife agencies to raise and stock non-game fish species such as darters, madtoms, minnows, and more.

## Growing Remarkable Fish

I sat down last spring for a virtual meeting with the co-founder of CFI, J.R. Shute, to learn about the unique work they do. Shute, logging in from a wood-paneled office decorated with illustrations of native fish, first explained the essence of what CFI is: a nonprofit fish hatchery, a fish reintroduction crew, and a fish population watchdog group, all rolled into one.

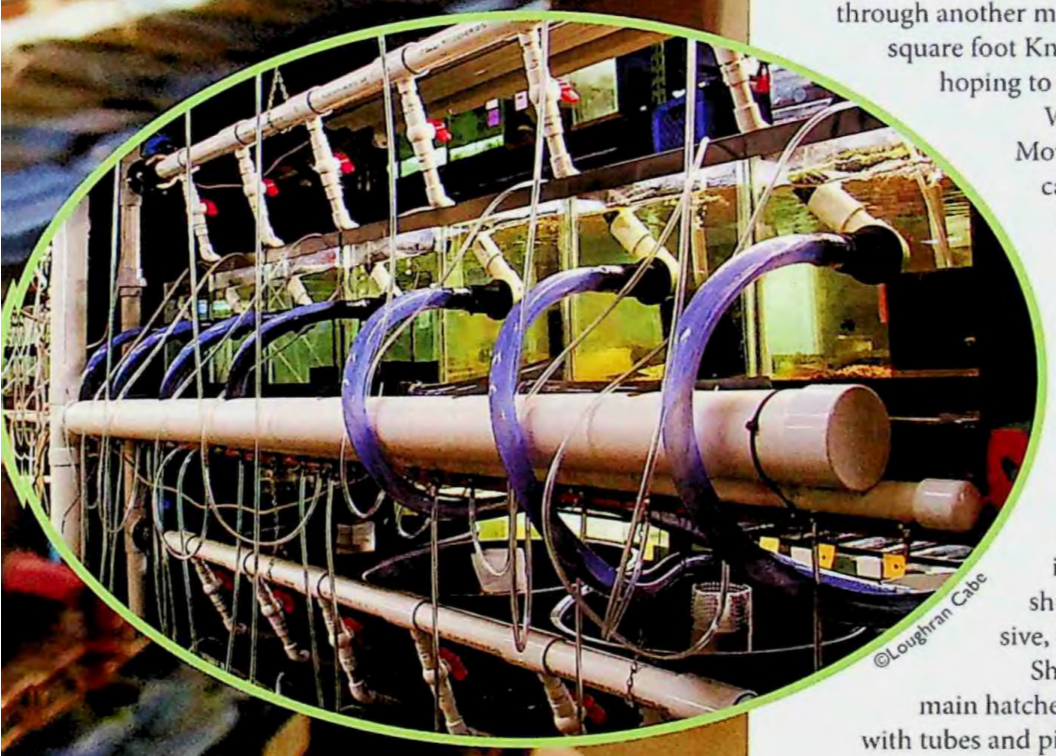
Shute and Patrick Rakes, the second co-founder of CFI, have been doing this sort of thing for a while; 35 years ago, they first dabbled in native fish propagation while working to reestablish fish in Abrams Creek, a damaged stream in the Smoky Mountains of Tennessee. Their success soon attracted the attention of agencies such as the Tennessee Wildlife Resources Agency (TWRA) and the U.S. Fish and Wildlife Service (USFWS), who approached them with species after species of fish they wanted to raise.

"Pretty soon," says Shute, "We quickly went from a couple tanks at the University of Tennessee to part of a strip mall in Knoxville, which we outgrew within a year." Fast forward through another move, and now CFI operates out of a 5,000 square foot Knoxville facility with 850 tanks, and they're hoping to expand further.

We embarked on a virtual tour of the facility. Moving through the building, it quickly became apparent that it takes a lot more than some tanks and prepared fish flakes to successfully propagate rare fish. Leaving his office, we first visited a room full of small tanks, cups, and tubes, a room devoted not to raising fish, but to raising fish food. On an average day, CFI has about nine employees, and according to Shute, a significant amount of their routine has to do with prepping fish dinners (as in dinners for the fish, of course). Raising and harvesting rotifers, daphnia, brine shrimp, and other live foods is labor-intensive, sometimes taking up half of a workday.

Shute brought the camera through to the main hatchery, an industrial-looking but lively room, with tubes and pipes everywhere, all connected to racks of carefully labeled tanks and vats reaching up to the ceiling. "It's a plumber's nightmare," joked Shute.

©Shutterstock



©Loughran Cabe

©Loughran Cabe

*Left:* Rows of tanks are dedicated to raising fish food such as daphnia (*top inset*). *Bottom inset:* Tubes and pipes connect 850 tanks with water and oxygen.

MUSCLE
SHOALS

©Loughran Cabe

©Loughran Cabe

©Derek Wheaton

Along the walls were waders, aquarium supplies, and other miscellany associated with fish husbandry. Shute panned the camera from tank to tank, introducing me to the fish themselves. He held it up to a tank full of small, tan fish, a species that exemplifies the importance of their work. "These are buck darters, out of Kentucky," he said. "They only live in one small stream, and it's only a couple of miles long."

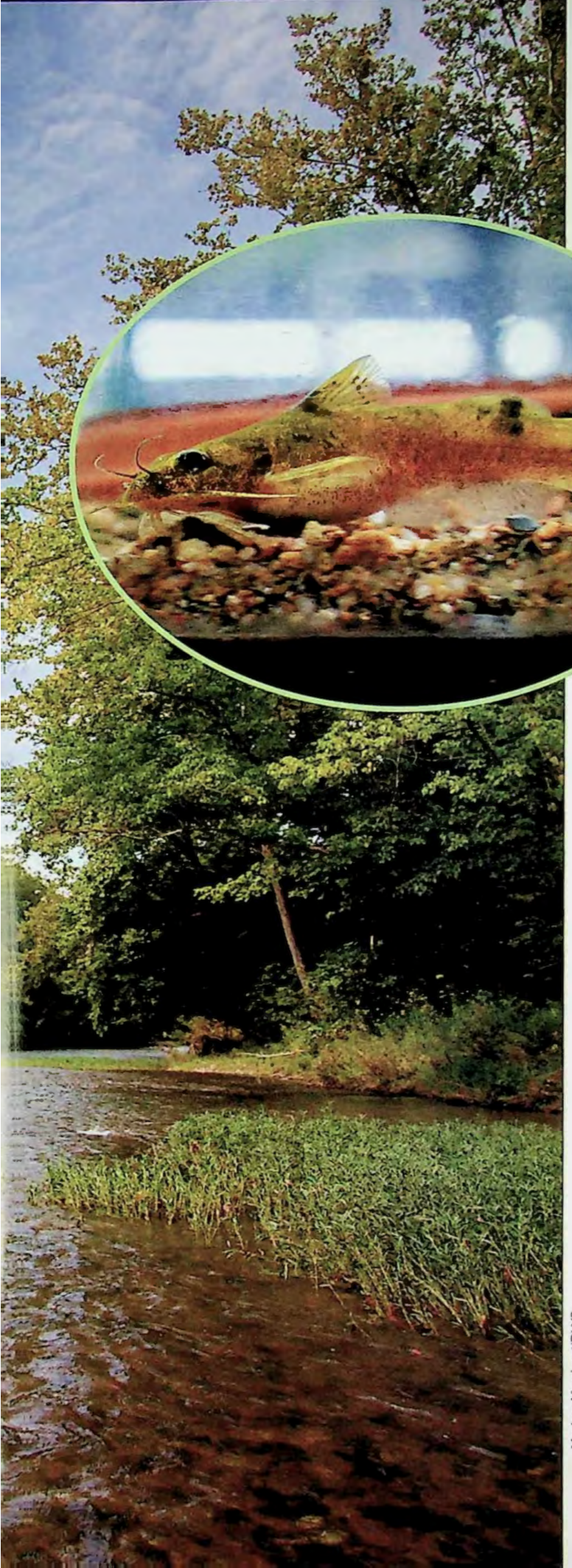
That's it, one stream. A single development project or pollution event could wipe out the species' entire wild population. He showed me some recently hatched young ones, and explained the complex process it takes to spawn them successfully. Slate pieces are left in the tank for the darters to spawn under, and moved to smaller vats once they contain the tiny eggs. Once they hatch, the young are raised on live brine shrimp, ensuring another generation of this fragile species.

Shute then introduced me to a unique fish from southwestern Virginia, the duskytail darter (*Etheostoma percnurum*). Shute explained their extraordinarily precarious situation. The darter lives only in Copper Creek, a Clinch River tributary, and nowhere else on the planet. "They only live in a couple miles of stream," said Shute. "The stretch that they're in seems to be shrinking every year." CFI is working tirelessly to reintroduce them into a stretch of the nearby Clinch River. "It's kind of a Hail Mary shot with them. They appear to be on their way out, and we'd hate to lose them," continued Shute. For species like the duskytail, CFI's efforts may mean the difference between continued existence and permanent extinction.

The day after our conversation, a CFI team was scheduled to head up to Virginia to survey for another imperiled Virginia native, the yellowfin madtom (*Noturus flavipinnis*), a small, strongly patterned catfish, in the North Fork Holston River. The species has been absent there for more than a century, but thanks to CFI's efforts, they're beginning to return. CFI has been reintroducing the species from a healthier population in the Powell River, and it seems to be working. "We've already seen reproduction," said Shute, which is a good sign for the madtoms' future. It's not often that a long-lost species returns to its historic range, and it's a cause for celebration.

*Left:* J.R. Shute, co-founder of Conservation Fisheries Inc., stands among rows of tanks housing imperiled fish. *Top inset:* Turning over a tile reveals freshly laid darter eggs. *Below inset:* The duskytail darter.

©Shutterstock



©Loughran Cabe

Meghan Marchetti/DWR

"[CFI] have been indispensable partners toward the recovery efforts for Virginia's endangered fish species." - Mike Pinder of DWR

## Working Together

Both of these projects are part of CFI's 25-year history of rich collaboration with DWR on fish conservation, said Mike Pinder, DWR nongame fish biologist. "They have been indispensable partners toward the recovery efforts for Virginia's endangered fish species," Pinder said. CFI's captive propagation capabilities "[have] allowed agencies such as DWR the possibility of species recovery using augmentation and reintroduction," Pinder continued.

With dire situations such as those faced by the yellowfin madtom and duskytail darter in mind, I asked about the threats our rivers and their residents face, and what we can do to protect our local fish. Shute was quick to stress the impacts of cattle on waterways; "If we could keep the cows out of our streams, that's way more than half the battle right there," he said.

Along with that simple measure, leaving a riparian buffer (an area of vegetation on a stream's banks that provides shade and protection from the impact of adjacent land uses) between farmed land and rivers can make a huge difference for a stream's health. And, these measures benefit landowners as well; Shute can remember watching, year after year, acres of land being lost to waterways through erosion. "I've seen some cases where they've actually gone in and done some riparian replacement and fencing out of cattle, and it's amazing how quickly some of these streams can recover," he said.

As Shute points out, some single rivers in Virginia contain more freshwater species than the entire United States west of the Rockies: "Virginia has incredible diversity, and they should be proud of that," Shute said. The work being done at CFI is difficult and they're often fighting an uphill battle, but their efforts give hope for our rivers and streams and the diverse fish that live in them.

---

*Loughran Cabe is deeply invested in conservation and has a lifelong fascination with biodiversity and wildlife, with a special passion for our native fishes. As an avid snorkeler and amateur photographer of fish and other wildlife, he posts @lockcabe on Instagram.*

*Left:* Water quality is an important factor in restoring imperiled fish species into Virginia waterways. *Left inset:* Cattle with access to waterways have a great impact on water and habitat quality. *Top inset:* Yellowfin madtoms are just one species that CFI is working to restore.

# Explore the Wild at the

The Virginia Department of Wildlife Resources maintains 78 Wildlife Management Areas (WMA) and Wildlife Conservation sites (WCS), with nearly 250,000 acres of land managed for a diversity of wildlife habitats and open to the public for wildlife-related recreational opportunities. For more information: *virginiawildlife.gov/wma*.

Photo by Ron Messina/DWR

# Robert W. Duncan Wildlife Management Area

√ Hunting √ Primitive Camping √ Hiking √ Trapping √ Warmwater Fishing √ Birding √ Photography

The Robert W. Duncan WMA in the northeast corner of Caroline County is a contiguous tract of 1,300 acres of flat to gently rolling land. The property conserves important upper coastal plain wildlife habitat and borders the Mattaponi River for three miles. Habitat is abundant for deer, turkey, squirrel, and black bears. An oxbow wetlands complex provides opportunities for duck hunting; woodcock are also common. The Mattaponi and two ponds host bluegill and redbreast sunfish, white and yellow perch, chain pickerel, bowfin, brown bullheads, and largemouth bass. Viewing opportunities include wading and migratory birds.

# The Incredible Journeys of High-Mileage Great Blue Herons

By Curtis Badger

©Lynda Richardson

The great blue heron flies in a manner similar to the way I walk after riding in the car for too long: slow, stiff, a bit unsteady. We live on a marshy branch of Pungoteague Creek on the Eastern Shore and get to see great blue herons on a regular basis. One glided up the tidal gut that separates our property from that of the neighbor, set its wings, and coasted to a stop in the shallow water as we were sipping our coffee one morning.

A few minutes later we heard a rasping squawk, a sound more mechanical than bird-like, and off flew the heron, laboriously pumping its great wings, long legs dangling behind like the tail of a kite.

I had never thought of the great blue heron as a graceful or even capable flier until I talked with Danielle D'Auria, the wildlife biologist for the Maine Department of Inland Fisheries and Wildlife (MDIFW) in charge of their Heron Tracking Program along with a citizen-science program called the Heron Observation Network of Maine (HERON).

To track herons, D'Auria and her team of volunteers have been trapping great blue herons, banding them, and attaching a GPS transmitter to their back like a miniature daypack. They have tracked the movements of the herons through several migration cycles now, and the results are startling.

D'Auria told me the story of Harper, a female heron outfitted with a transmitter in Harpswell, Maine, in May 2019. Since then, she has divided her time between New Brunswick in Canada and Guajaca Uno in Cuba. Consider this itinerary of a bird that to the human eye appears more prehistoric than airworthy:

On October 8, 2020, at 6 p.m., Harper left Pointe-a-la-Croix in Quebec and headed southwest. On October 11, at 3:15 in the afternoon, she arrived at Cumberland Island National Seashore in Georgia, ending a 68-hour non-stop flight of 2,030 miles.

A year later, on October 2, 2021, Harper pulled out of New Brunswick, headed south, and 40 hours later arrived on the island of Bermuda. After resting there for three days, she again headed south, and after 30 more hours of non-stop flight arrived in the Bahamas. She rested for eight hours and then completed the final leg to Guajaca Uno. The trip took seven days and covered 2,130 miles.

## Residents and Visitors in Virginia

We have great blue herons in Virginia year-around, and many of us assume they are all resident birds. Some are, but some are also just stopping in on their way elsewhere as they migrate. It's difficult to imagine a great blue flying non-stop from Canada to Georgia, or from Canada to Cuba by way of Bermuda. But herons whose breeding grounds are in the northern United States and Canada must migrate in order to survive. Herons are adaptable birds, but it would be difficult for them to make it through a winter at that latitude. What is surprising is the heron's ability to cover great distances in a limited amount of time. Modern technology such as GPS tracking is opening eyes to the amazing movement of birds.

Some of these awkwardly elegant birds are resident to Virginia, but some are just passing through.

D'Auria's team of volunteers has been tracking 10 herons, all of them banded and fitted with a solar-powered transmitter in Maine. It is a small sample size, and the program is in its sixth year, but a pattern seems to be developing. The birds leave breeding grounds in Canada and the northern United States in early fall and fly directly to wintering areas in the Caribbean, Haiti, or Cuba. If you look at a map, you'll see that it's pretty much a straight shot from New Brunswick to Bermuda to the Bahamas to Guajaca Uno, which is on the northeastern end of Cuba north of Guantanamo. When the herons decide to move south for the winter, they move with dispatch.

The return trip in spring seems to be the opposite. The birds take their time, and they follow spring as it spreads warmth up the coast of the United States. The GPS flight lines seem to form an oval, with a clockwise flight path, south over the open water in fall, and a leisurely pace up the coast in the spring.

There are resident populations of great blue herons in Virginia, since they can forage year-round without a hard freeze. D'Auria told me that the herons that nest in Virginia likely stay within 10 miles of their natal rookery, although we are probably not seeing the same birds in July that we see in January. Virginia is in what ornithologists call a "migratory transitional latitude" for herons. Virginia provides both breeding grounds and wintering habitat.

The birds we see in April or May could be local, or they could be long-distance flyers making their way back north to breeding grounds in Maine or Canada. For example, our high-mileage friend Harper, who wintered in Cuba, spent May 18 and 19 in 2020 relaxing along the banks of the York River. In 2021, she stopped at New Virginia Cove near Chincoteague on May 24 as she made her way north. Sadly, Harper's transmitter stopped working in February of 2022 while she was in Cuba for the winter.

Cornelia, one of the first herons to be fitted with a transmitter in 2016, has established a spring itinerary that has varied little over five years. Stops in late March and early April include Northwest River, Cavalier Wildlife Management Area (WMA), and Lake Tecumseh in Virginia Beach, Pleasant Grove West in Chesapeake, and Mockhorn Island WMA on the southern tip of the Eastern Shore. The Virginia barrier islands are part of her flyway byway, with stops at Hog and Parramore islands and Wallops Island National Wildlife Refuge near the NASA launch site.

So, the great blue herons we see in Virginia in the spring could be local birds that hatched in a rookery just a few miles away, or they could be worldly, cosmopolitan travelers who summer in Canada and winter in Guajaca Uno in northeast Cuba.

## The Unlikely Commuter

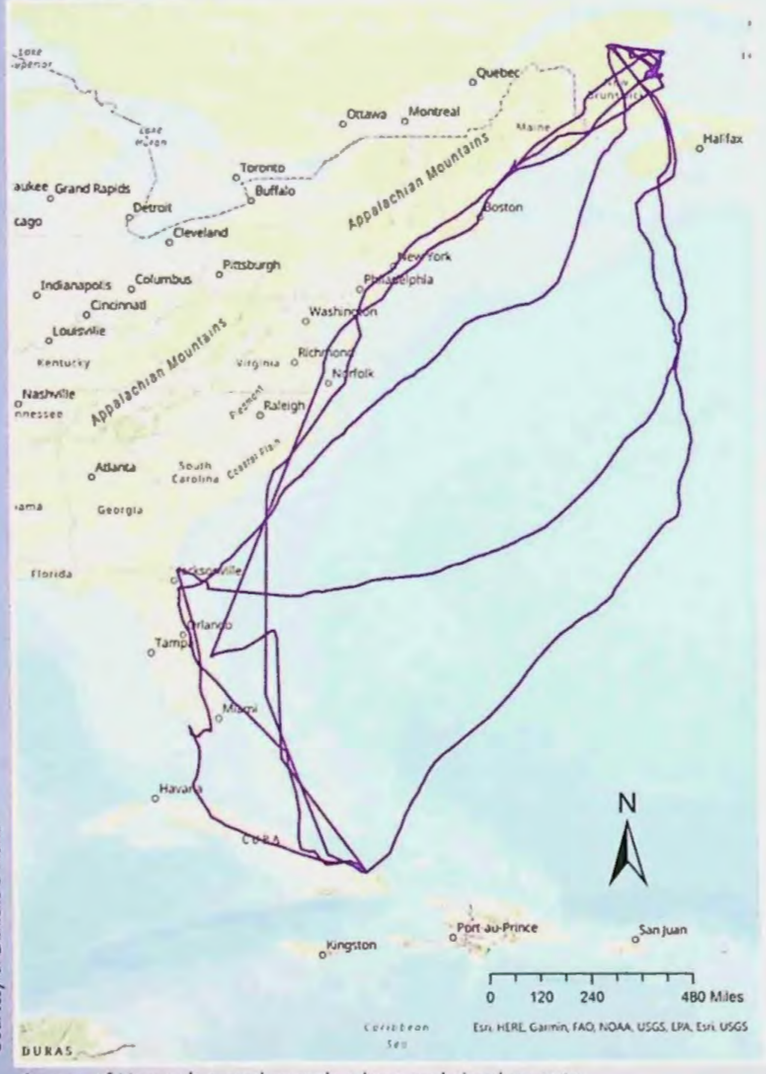
Herons have fared well in Virginia and the population has recovered nicely since numbers plummeted in the 1960s because of exposure to DDT (dichloro-diphenyl-trichloroethane). Harold Bailey, in his 1913 classic, *The Birds of Virginia*, wrote that the heron, or blue crane as it was called then, was

Courtesy of MDIFW

A close-up of Harper after capture.

Courtesy of Jen Nadeau

Danielle D'Auria, wildlife biologist for the Maine Department of Inland Fisheries and Wildlife (MDIFW), takes measurements of Harper before she is fitted with a transmitter and released.




Courtesy of Danielle D'Auria

A map of Harper's travel reveals a long and circular route.

Courtesy of MDIFW

Harper was captured in Harpswell, Maine by Maine Department of Inland Fisheries and Wildlife biologists with help from students from the Harpswell Coastal Academy who are part of the citizen-science program called the Heron Observation Network of Maine.

an abundant bird in Tidewater Virginia. Bailey mentioned that the birds move south for the winter, and then return in March, but that doesn't seem to be the case today. Coastal Virginia usually has mild winters with few lengthy freeze-ups, so herons can easily find food.

Habitat loss can disrupt nesting colonies in wetlands and chemical pollutants or other causes of reduced water quality are also threats to the species, but great blue heron numbers are stable and the North American Breeding Bird Survey showed that their numbers increased in the United States between 1966 and 2019. Virginia's great blue heron breeding population has also increased since the 1960s. However, the 2013 Virginia coast-wide colonial waterbird breeding survey revealed the first documented decline in more than 40 years despite a continued increase in the number of breeding colonies.

It appears larger colonies are getting fragmented, which has led to a decline in colony size. Moreover, many major colonies from the 1970s and 1980s are no longer present. Unfortunately, great blues have not been surveyed in Virginia since 2013, so it's unknown how the breeding population is currently trending in the commonwealth. Great blues regularly appear in Virginia in the Audubon Christmas Counts, and the population has expanded from the Tidewater to the Piedmont. Herons are common anywhere there is still water, whether it is a tidal flat on the coast or a beaver pond in the mountains.

Great blue herons are perhaps Virginia's most-photographed bird. It is a handsome bird of extremes—long of leg and bill, with a penetrating stare and a fierce capability to concentrate while hunting. It is awkward and yet graceful, plodding and yet a cat-quick athlete when it comes to catching prey. It makes a sound like metal scraping metal. Oldtimers on the coast named the heron Cranky, which still seems to fit.

The heron seems an unlikely long-distance commuter. Herons nest in groups called rookeries, or heronries, usually high up in a remote stand of trees. They build nests, large platforms of sticks, 20' to 60' above water. Watch a flock of them return to a rookery some evening and it will be like watching an accident happen in slow motion. Herons were not designed to land gracefully in the limbs of a tree; they usually succeed, though it's painful to watch.

Herons tend to stand still or walk slowly in shallow water as they watch for fish to swim near. A quick stab of their bill brings the prey to them. Fish make up the bulk of their diet, but they also consume frogs, salamanders, turtles, snakes, insects, rodents, and smaller birds.

But the great blue heron is built for distance flight. It is North America's largest heron, a bird with a length of 4 ½ feet and a wingspan of 6 feet. Yet, in spite of its impressive dimensions, it weighs only about six pounds. When it gets air under those vast wings and climbs to altitude, the heron becomes a glider, a sleek and aerodynamic flying machine. It can literally fly for days without refueling.

Harper's great journeys have given me a renewed respect for our big herons. From now on, every heron that glides up our tidal gut will be viewed with curiosity. Could this be one that flew 68 hours non-stop from Canada to the Georgia coast? And could this one possibly have wintered last year in Cuba? The great blue heron, thanks to the technology of GPS, has gone from a gawky neighbor to a bird of mystery and wonder.

---

*Curtis J. Badger has written widely about the natural history of the coast. His book,* Wilderness Regained, Story of the Virginia Barrier Islands, *has been released in a second printing.*

©Lynda Richardson

A great blue heron stalks minnows along the edge of a creek.

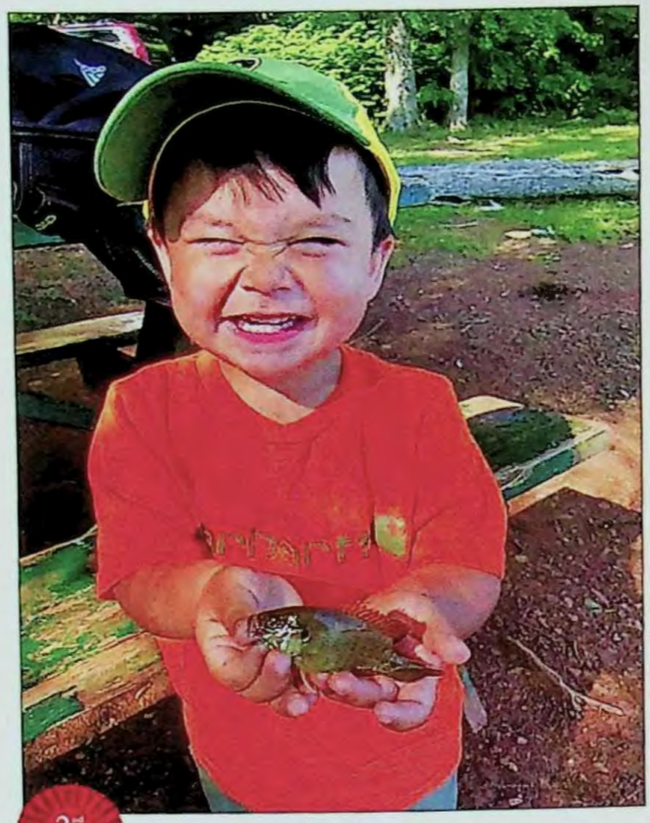
©Bob Schamerhorn

A pair of great blue herons court and prepare a nest together in a rookery.

# KIDS 'N FISHING

## Ages 1-5

FIRST PLACE
Cooper, age 5



SECOND PLACE
Wilson, age 3

**Congratulations**
to all who entered and
**THANK YOU** to our sponsors!

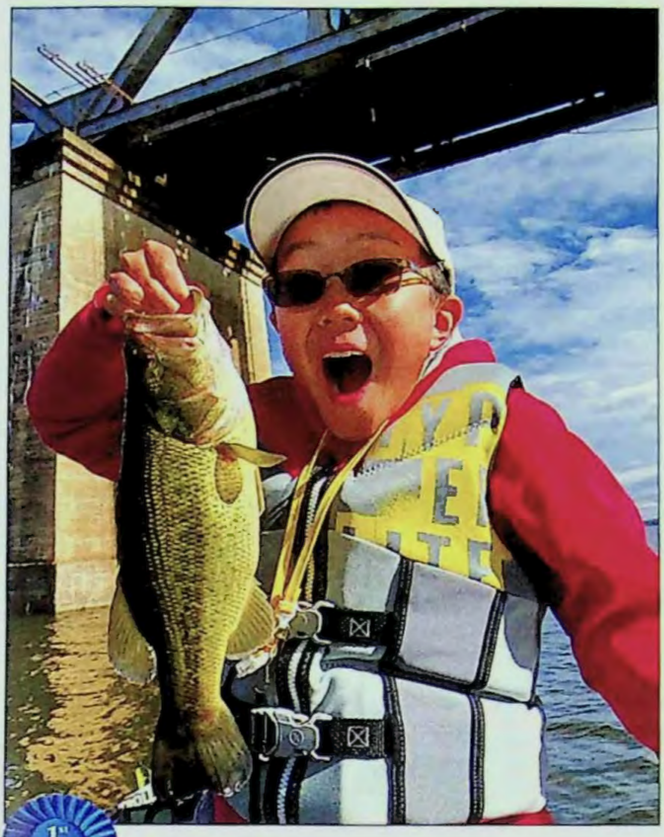
VIRGINIA DWR

GREEN TOP
EST. 1947
HUNTING & FISHING

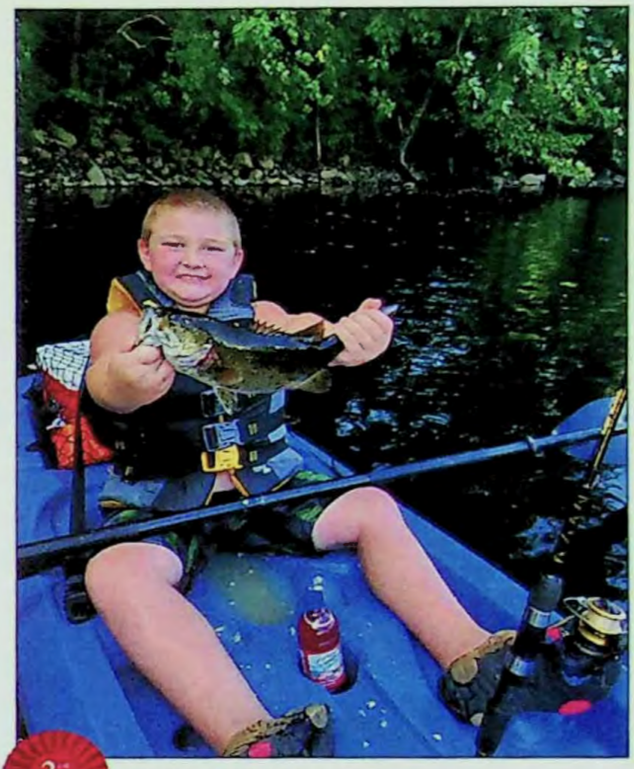
THIRD PLACE
Miles, age 4

# 2022 Photo Contest Winners

Ages 6- 10



FIRST PLACE
Teddy, age 10



SECOND PLACE
Ivan, age 6

THIRD PLACE
Abby, age 9

Capture your child's big smile as they show off a great fish! Make sure to take a picture of your child's excitement while fishing and enter the photo in DWR and Green Top Sporting Goods' annual Kids 'n Fishing Contest. The winning photos are those that best capture the theme of "kids enjoying fishing." Each winner receives a rod and reel fishing combo and a lure and tackle assortment courtesy of Green Top Sporting Goods. So, join the fun!

Photo Contest sponsored by Virginia Department of Wildlife Resources and Green Top Sporting Goods.

For contest rules and requirements go to:

*virginiawildlife.gov/kidsnfishing*

**DEADLINE: OCTOBER 6, 2023**

# Communicating About Conservation:

# WHAT'S IN IT FOR ME?

Building support for conservation among diverse interest groups requires good storytelling and great messages about why the science matters.

By Beth Hester

Maybe you're part of a neighborhood garden club advocating for no-mow lawns and pollinator-friendly park plantings. Perhaps you're an angler requesting the cooperation of local farmers and ranchers to help restore riparian buffer zones to increase water quality for fish. You could be a hunter making the case for why hunting is wildlife conservation, or you've been called upon by your organization to make a science-based presentation about sea level rise adaptation to an audience of decision-makers with wildly divergent political views and uneven levels of subject matter knowledge.

Courtesy of Sara Harris Photography

Dave and Paula Jasinski work to help organizations shape conservation messaging effectively.

You're armed with extensive research, PowerPoint decks, loads of data, and good intentions, but how will you connect with your audience to maximize the impact of your message? How will you deal with audience members who've come not to learn, but perhaps, to disrupt? Do your visuals and infographics breathe life into the story behind the data?

Working collaboratively with a wide range of organizations and stakeholders to effect change can be challenging. The authors of the book *Speaking of the Environment: What Your Science Classes Didn't Teach You About Effective Communication*,x Paula and Dave Jasinski, have helped scientists, laypersons, and everyday environmental advocates connect their science and environmental goals with the kinds of effective communication strategies that lead to successful outcomes and fruitful collaborations.

The Jasinskis and their staff help science, conservation, and sustainability organizations make science accessible and actionable to their audiences from their Green Fin Studio in Richmond. Green Fin's work with the Delmarva Land and Litter Collaborative has become a national model for how diverse groups with seemingly conflicting interests can work together at the intersection of sustainable food production and the achievement of environmental goals. Their practice is informed by a firm grounding in science, data analysis, and policy work.

"During our early careers as scientists and as policy specialists, Dave and I kept seeing this recurring information gap," Paula explained. "So often, the scholars and scientists who have the relevant data don't have the kind of background or training to successfully communicate with people who don't have scientific degrees. They're used to preaching to the choir. There wasn't a focus on creating clear, digestible content that people could relate to. We made it our mission to dig deeply into innovative data visualization, video work, storytelling, outreach efforts, and strategic thinking to help organizations tell the right story to the right audience. Whether the topic is fisheries management, climate change, heat islands, or wildlife habitat, people need to know why the science matters."

Paula recalled speaking with a group of farmers about a project to restore wetlands on farms located within the Chesapeake Bay watershed. One farmer told her: "Don't sell me on

the value of wetlands, sell me on why they're valuable *to me*." "He made an important point, and we kept this in mind as we continued to communicate the program's benefits," Paula said.

Ultimately, the success of that particular wetlands program was due in part to the Jasinskis' understanding that for their target audience, the environmental benefits needed to be put on an equal footing with the economic benefits. In other words, effective conservation communication isn't always about convincing people to care about an issue for reasons that are important to you—it's about convincing them to care about and act on an issue for reasons that are important to them.

The Jasinskis emphasize that one of the most important components in any organization's communications plan is the ability to answer the question: "What's in it for me?"

"We learned over time that the information deficit model wasn't working; it wasn't enough," Dave said. "From a social science perspective, we decided to make a shift. Going forward, the focus of our practice had to be on showing stakeholders how a particular issue would impact them, and to make the science both relatable and approachable through multiple vehicles. We recognize that for many people, thinking environmentally is a luxury. Free time is limited. They're working hard to pay the bills."

Here's a small sampling of the tips, tools, and strategies drawn from the Jasinskis' combined five decades of experience:

- Use storytelling and narrative building as powerful tools to engage your target audience
- Turn scientific findings into powerful infographics for communicating ideas
- Use story maps effectively
- Understand why language matters
- Build bridges and outreach strategies. Legislation alone isn't the answer
- Combat misinformation
- Craft clear, jargon-free messaging that resonates
- Deal with disrupters
- Collaborate with diverse entities to advance mutually beneficial outcomes
- Practice active and empathetic listening to advance trust
- Communicate hope and focus on positive solutions

These messaging best practices can be used by anyone who seeks to broaden the base of public support for their conservation-oriented projects.

So how are environmental advocacy entities in Virginia integrating effective communication techniques in their own outreach missions to move important projects forward? To find out, we asked three organizations representing diverse regions of the commonwealth to share their insights: The Elizabeth River Project (ERP), The Piedmont Environmental Council, Virginia (PECVA), and the Virginia Department of Wildlife Resources (DWR).

## The Elizabeth River Project
### Marjorie Mayfield Jackson, Executive Director

We spent our organization's formative years breaking down barriers, and finding common ground between the Elizabeth River's polarized interest groups. It was intense. Studies were emerging about fish cancers, and regulatory agencies were beginning to crack down on industries regarding their discharges as the river had served as a dumping ground for industrial waste. Drastic changes were needed, but the various factions were angry and not talking to each other.

We enlisted a small branch of the U.S. Environmental Protection Agency (EPA) to help us put in place a disciplined planning process designed to align science with public values. We created a team of 120 stakeholders from all walks of life. It's important to have the right people around the table. They met in four committees; government, science/technical, business, and citizen interests. We hired the best facilitator we could find, and we held clam bakes, and overnight retreats in wilderness settings.

Courtesy of The Elizabeth River Project

Engaging stakeholders in projects like cleaning up the Elizabeth River requires that they buy into the value of the project and its results.

Courtesy of The Elizabeth River Project

Effective conservation messaging explains why a project, such as restoring a shoreline by planting native grasses, has an impact on a stakeholder.

Courtesy of The Elizabeth River Project

"The Goo Must Go" was the tagline that helped clean up Money Point in Chesapeake, one of the Elizabeth River's most contaminated areas that has been transformed into a thriving natural shoreline.

Over a beer and a campfire, the real conversations happened. Ultimately there was powerful consensus among virtually all interests for 18 specific actions to clean up and revive a river that had been given up for dead. Since our founding in 1993, there's been remarkable progress. In 2011, the Stanford Social Innovation Review cited our organization's work as an example of what successful collective impact looks like when you work toward mutually beneficial outcomes and build trust.

We've had success in our messaging and community outreach efforts through the use of simple, memorable, and compelling phrases. "The Goo Must Go" tagline for the initiative to clean up toxic sediments at Money Point in Chesapeake is one example. Our newest tagline, "Do Something Beautiful," encourages people to feel great about engaging in efforts to achieve a clean, beautiful, healthy river.

The challenges? Today's polarized political landscape has made communication more difficult. Zoom as a remote communications tool in the Covid era makes it harder to form genuine relationships. We're re-thinking how to strengthen our collaboration model to meet emerging needs, and we're trying to do a better job of engaging vulnerable communities, while continuing our work with industries to inspire positive change.

## The Piedmont Environmental Council, Virginia
### Chris Miller, President

Science is important, but in general, people don't make decisions based upon science, statistics, and data. This is true for individuals and for society as a whole. We understand that as an organization we need to be creative about our messaging, which means finding ways to get the science from the data owners (scientists and researchers) and convey that information to the public and to the decision-makers in ways that are compelling. People want to know that there's science behind what you're doing, but they may not be interested in the details on a granular level.

PECVA is a community-based organization. The majority of our resources go to local programs and activities, and we're always looking for ways to partner with other organizations and businesses to achieve environmental goals. Over the years we've learned that the challenge of communicating complex issues is to be able to explain to stakeholders the why as much as the how. We have to be able to connect science to outcomes at the local level so that people have a sense of possibility.

Take the Virginia Grasslands Bird Initiative. It's a collaborative program designed to stem the tide of grassland bird decline, improve the resiliency of working landscapes, and positively impact the livelihoods dependent upon those lands. We're promoting the benefits of bird-friendly land management practices on private land so that birds like northern bobwhite quail, short-eared owls, northern harriers, and eastern meadowlarks can survive and thrive.

Courtesy of Hugh Kenny

Landowners listened as Piedmont Environmental Council representatives explained the Virginia Grassland Bird Initiative at an event in Fauquier County.

Research shows that environmentally sound land management enriches soil, improves watershed health, and helps restore functionality to working landscapes. That's the "what's in it for me?" for the landowners and farmers. There's a mutual benefit for both the birds and the landowners. Farming with intention is a win-win. But how do you reach people and share scientific information in a way that's both personal and efficient?

Whether the topic is grassland birds, climate resiliency, or stream restoration, we began to weave the science into our messaging via multiple vehicles. We are leveraging the power of social media, story maps, interactive media, direct mail, and video to produce content that can multiply the numbers of people we can reach to raise awareness. It's a more equitable way of making information available, and we're seeing our

programs grow because of these efforts. If we can make issues like stream restoration, land conservation, and riparian buffers TikTok-worthy, then that's a great thing.

### Virginia Department of Wildlife Resources
### Becky Gwynn, Executive Deputy Director

One of the most interesting and complex projects that DWR was involved with has to be the relocation of Virginia's largest seabird colony during the Virginia Department of Transportation's (VDOT) Hampton Roads Bridge Tunnel (HRBT) expansion project. It was a highly technical project with a tight timeframe that involved coalition-building, problem-solving, and working in concert with various entities that had competing interests: transportation and safety, city and federal government entities, historic preservation groups, contractors, military interests, and conservation and birding organizations. It's one of the projects of which we're most proud.

Every spring, thousands of seabirds migrate to Virginia's nesting grounds. Though our coastal plain is host to multiple nesting and fledgling grounds, the South Island of the HRBT complex located at the mouth of the James River has for decades been the location of choice for one of our state's most well-established seabird colonies. It's a great place for them to fish and feed their young before they migrate south to overwinter (which is an incredible spectacle in itself), so the birds have a high fidelity to this habitat. Many of the seabirds, the royal and sandwich terns, nest nowhere else in Virginia. Five of the species are listed as Species of Greatest Conservation Need in Virginia's Wildlife Action Plan. But the $3.8 billion HRBT expansion, which was our state's largest transportation initiative to date, led to the displacement of the South Island Colony.

DWR was tasked with finding a solution. How could we find or construct an alternate nesting place so that the colony could return, and how could we entice the birds to use the new spot once it was located? People had a hard time understanding why it was important to accommodate the seabirds. People asked, "This is a multi-billion dollar transportation project, and you're worried about some birds?" We needed to make VDOT a partner in this voluntary conservation initiative, so we needed to provide factually correct information to all of the stakeholders, and we needed to tell the seabirds' story.

By telling their story through compelling images, videos, and graphics via multiple channels, we could generate enthusiasm and get people invested in the colony's success. We could show people why relocating the birds was important, how loss of species would impact the health of the Chesapeake Bay ecosystem and aquatic vegetation, and how much money the state could lose if the seabird colony dispersed and never returned. Not all of the interested parties understood the economic value of the birding community in Virginia; it's a multi-billion dollar business that benefits the state and local economy.

We did a lot of community outreach, made presentations to the public, engaged with stakeholders, enlisted the help of subject-matter experts, and fostered relationships with people and organizations who care about the same things. Ultimately, the coalition that led to the relocation project's success miraculously began to build itself. It was a win-win for all involved.

---

*Beth Hester is a writer and freelance photographer from Portsmouth. Her passions include reading, shooting, kayaking, fishing, tying saltwater flies, and tending her herb garden.*

Meghan Marchetti/DWR

Telling the seabirds' story was essential in turning the relocation of Virginia's largest seabird colony into a hugely successful project.

# Working for Wildlife By Molly Kirk

The mission statement of the Department of Wildlife Resources (DWR) reads that we seek to conserve, connect, and protect: **Conserve** and manage wildlife populations and habitat for the benefit of present and future generations. **Connect** people to Virginia's outdoors through boating, education, fishing, hunting, trapping, wildlife viewing, and other wildlife-related activities. **Protect** people and property by promoting safe outdoor experiences and managing human-wildlife conflicts. Here are a few of the many accomplishments of DWR staff in working toward those goals...

## WMA Dedication Recognizes CPOs

On December 19, 1972, two Game Wardens with the then-Virginia Commission of Game and Inland Fisheries (now DWR) were killed in an airplane accident while flying a night patrol searching for spotlighters in Southampton County, Virginia. The Piper aircraft they were flying caught fire and crashed into trees at the edge of Darden Pond. The wreckage was found the next day.

Game Warden Gentry, 36, had served for four years and was survived by his wife, four daughters, and son. Game Warden Flippo, 26, was a U.S. Army veteran of the Vietnam War and had served with the Department for 10 months. He was survived by his wife.

In October, DWR dedicated the Flippo-Gentry Wildlife Management Area (WMA) in their honor, inviting the families of both Flippo and Gentry to the ceremony. Flippo-Gentry WMA is a 2,000-acre tract formerly known as the Parkers Branch tract of the Big Woods WMA that includes the location of the plane crash.

Meghan Marchetti/DWR

## Allegheny Woodrat Study Underway

Rick Reynolds/DWR

As part of a range-wide effort to map the DNA diversity in Allegheny woodrats (*Neotoma magister*), DWR biologist Rick Reynolds, in cooperation with Dr. Powers and students from Radford University, biologists from Harper's Ferry National Park, and biologists from West Virginia Department of Natural Resources (DNR), conducted live trapping at five sites at Harper's Ferry National Park in Virginia and West Virginia. Five woodrats were captured at two sites, including three adult males, one adult female, and one juvenile male. DNA was collected from the woodrats via an ear clip. Allegheny woodrats have been declining throughout most of their range, including portions of Virginia and West Virginia.

The ad hoc Allegheny Working Group is developing a DNA map to support the long-range goal of setting up a captive breeding program. The goals of the breeding program are to supplement declining populations and reintroduce individuals back into extirpated sites. DWR staff and cooperators collected DNA samples from woodrats in other parts of the state during summer and fall.

## Saving the Black Ash Tree

Ron Hughes/DWR

DWR has been working since 2017 to save a stand of black ash trees, a rare tree in Virginia that grows only on certain types of sites, from the invasive and destructive emerald ash borer (EAB). The black ash (*Fraxinus nigra*) grows in a seepage swamp that's a unique site favoring the persistence of northern plant species (including black ash) that long ago migrated out of the surrounding area as climate changed during the last ice age 8,000-10,000 years ago. Black ash occurs at only a few small locations in seepage swamps in Virginia.

Black ash was a dominant tree species in the swamp but took a hard hit when the EAB reached northern Virginia in 2008. In 2016, DWR Regional Lands and Access Manager Ron Hughes found extensive damage to, and mortality of, the majority of the black ash trees in the swamp, though most of the seedlings and saplings were still alive. In spring 2017, Hughes initiated an EAB control program in cooperation with Fairfax County's Urban Forestry Division (FCUFD) and the Virginia Department of Forestry (DOF) to stave off the impacts of the beetle.

Control efforts included using a chemical pesticide injected into the trees and releasing/establishing parasitic wasps in the area as a more continual, natural control. Since 2017, two seasons of wasp releases (2017 and 2018) and four pesticide treatments (2017, 2018, 2020, 2022) were completed. More than 200 black ash trees have been treated.

---

## Habitat Preserved for Tiger Salamanders

The eastern tiger salamander (*Ambystoma tigrinum*) is a state-endangered species that has two distinct lineages in Virginia. The Blue Ridge Mountain lineage is believed to be a surviving relic of the last ice age, while the Coastal Plain population is believed to be a recolonization from a northward range expansion from the Carolinas following the last glacial episode that ended about 11,000 years ago.

The Coastal Plain population has only three known breeding sites. One of these sites in Westmoreland County was discovered in 2016 at an old mill pond site that according to locals had been abandoned for more than 50 years. Unfortunately, a few years after the discovery was made by a DWR biologist, the small earthen dam eroded to a point that it no longer retained water.

Coordinating with the landowner, DWR staff gained permission to restore the dam breach in time for the breeding season that began in mid-December. During significant winter rain events, tiger salamanders migrate up to half a mile to seasonally flooded ancestral wetlands.

It is possible that the salamanders had not bred successfully at this site for a few years due to lack of water, so it is imperative that repairs were made quickly as to not miss another breeding season. DWR biologists and Lands and Access staff completed the repairs, will continue to monitor the site, and are hopeful the population will recover.

J.D. Kleopfer/DWR

# PHOTO TIPS

Column and photos
by Lynda Richardson

## Take Better Fishing Photos with a Cell Phone

What's a great catch if there's no photo? Capturing an image of the fish you catch is a wonderful way to preserve the moment (and prove bragging rights to your friends!). With the great cameras in cell phones these days, getting a nice image of your catch is easier than ever.

I would be remiss if I didn't mention something about fish handling. If you are practicing catch and release, remember to wet your hands before handling the fish to preserve their protective slime coating, minimize the time that they're out of the water, and give them time to recover in the water before being set free. It's also best to hold fish two-handed in a horizontal position and not suspended vertically by their lower jaw. So please, remember that these living creatures deserve respectful handling.

That said, after bringing a fish to the boat or shore, net it, ideally in a rubber net that doesn't damage the fish's slime layer. This way you can contain the fish in the water while removing the hook as your fishing partner prepares to take your picture. Bring the net into the boat, and with both hands lift the fish horizontally. Hold it out toward the camera and make sure your companion takes several quick pictures before placing the fish back into the net, and then into the water, where it can recover before you release it.

When you are taking pictures of anglers with their fish, consider the following tips:

**Light and Shadows:** Overcast light is great to shoot in as there are no harsh shadows to contend with. Bright sunlight low on the horizon is also wonderful, with its warm glow. Bright sunlight higher in the sky, however, can create harsh shadows falling across your subject. Watch where shadows fall so you can avoid them creating distracting dark areas on your subject. This might mean changing your angle or your subject's position, or simply turning the boat.

**Horizon Line:** Make sure your horizon line, if you have one, is straight. Otherwise, you will have sea-sick viewers.

**Foreground and Background:** Pay attention to your foregrounds and backgrounds, watching out for distracting elements. Is there a tree behind your subject's head creating devil horns? Is the fishing rod and/or fishing line crossing your subject's face? Quickly look around the frame before having the fish pulled out of the water for the shot.

It's possible to combine safe fish handling with capturing memorable images.

Watch your backgrounds for distracting elements.

Bright, overcast light illuminates your subject without shadows. This is also a good example of making the background work for you and holding out the fish to make it look bigger.

Watch for distracting elements such as fishing line crossing over a subject's face or the fish.

Using a selfie stick with a remote release set up ahead of time enables you to quickly capture a nice shot of your catch.

**Get Closer:** Don't be afraid to get closer to your subject, or zoom in. Be sure not to cut off any of the fish, like the tail. Seeing the whole fish is the point of the photograph, right?

**Make it Bigger:** This is a well-known trick among anglers. Hold the fish out toward the camera horizontally to make it appear bigger. By hiding your fingers, it will be less obvious that you are holding the fish away from you.

That all sounds great if you or a companion are taking the pictures but what if you're by yourself?

You can purchase a selfie stick that has its own tripod and wireless release. I use one called Bluehorn. You can set up your selfie stick tripod on the bottom of the boat or even clamp it to a boat gunnel or seat. If needed, place objects on the tripod feet that are heavy enough to secure it in the boat. Attach your phone to the stick and change the perspective to capture a selfie from where you are sitting. You should be able to see what the camera sees, so adjust your position or phone setting accordingly. I will take test shots pretending that I'm holding a fish. Once you are set up, it should be easy to net your fish, remove the hook, and hold up your catch while pressing the remote release button. Take several pictures before releasing your catch.

Now that you know how to take better fishing pictures, get out there and enjoy all of the great fishing opportunities Virginia has to offer!

---

*Lynda Richardson is the art director of this magazine and an avid angler.*

A selfie stick on a tripod makes taking your own fishing photos much easier.


NANPA
North American Nature Photography Association

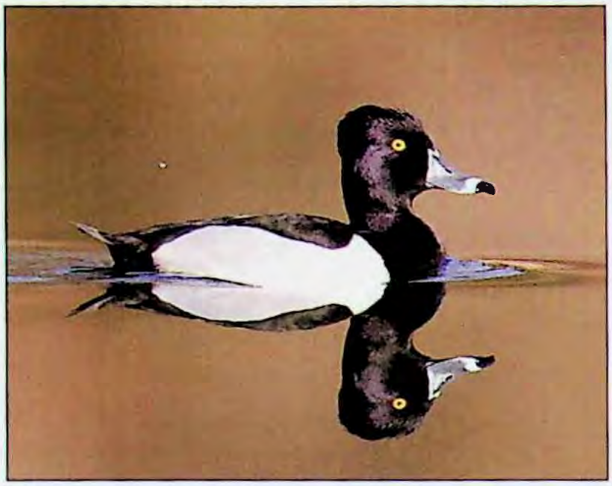
Don't forget about the
**North American Nature Photography Summit**
**May 4-7, 2023**
**in Tuscon, AZ**
*https://nanpa.org/events/*

# A Walk in the Woods

Column and photo
by Mike Roberts

## The Ring-Necked Duck: A Delightful Diver

Make no mistake about it, waterfowl hunters love nasty weather conditions. Cold temperatures, gray skies, and stiff breezes that demand layered clothing, insulated waders, headgear, waterproof gloves, and hand warmers are deemed perfect. In recent years, however, changing autumn weather patterns have resulted in warmer mean temperatures and frustration for this dedicated aggregation.



The trend means that fall migratory flights along the Atlantic flyway sometimes stop short of Virginia's abundant waterfowl habitat. Behavior of this nature is based on food availability and preserving precious fat reserves. In other words, many ducks simply migrate no farther than necessary to survive. And to further frustrate sportsmen, prolonged freezing temperatures often arrive during the latter part of hunting season, which locks up wetlands and forces many of the flocks further south in search of open waters.

Now, it's not all gloom and doom! There are ducks to be hunted every year and dyed-in-the-wool waterfowlers continue lugging bags of decoys to swamps, sloughs, and rivers before dawn. Albeit true, reduced numbers of birds necessitate harvesting less-desirable species, like divers, on occasion. And just as my dear old mother always said, "If you shoot it, you eat it!"

Regarding wild ducks as table fare, comparing species of dabblers to most divers is like comparing a filet mignon to a sirloin. Even so, if prepared properly, sirloins can be tender and quite tasty. True, a black duck or grain-fed mallard is superior in flavor to a bluebill, but the shooting action produced by circling flocks of decoyed pochards make any morning's hunt worthy of that 4:00 a.m. wake-up. Excluding the fish-eating mergansers, diving ducks marinated and cooked fresh are quite palatable. And the delightful ring-necked duck is no exception!

Ring necks are fairly common, medium-sized ducks that are sometimes confused with other species of divers—especially scaup. Males have black backs, white sides, and angular-shaped heads; greater and lesser scaup have gray backs and rounded heads. The namesake, iridescent, chestnut-colored, neck ring is visible only at close range. Another primary identification marking is the prominent white band across the gray, black-tipped bill. The female is easily identified by rich-brown body feathers; dark-gray head; and the distinctive, white bill ring.

While most species of diving ducks prefer large bodies of open water, ring-necked ducks favor small impoundments and beaver ponds—especially those surrounded by forestlands. Whereas most divers require open water for their laborious, running take-offs, ring necks are capable of flushing directly up from the water's surface. In shallow ponds, they both dive and dabble to consume aquatic plants, aquatic insects, and mollusks.

During spring, these ducks migrate from the Caribbean, Central Mexico, and the southern United States to the boreal forestlands of Canada and as far north as the Northwest Territories. There, the female constructs a nest in emergent vegetation of a boreal pond. For 28 or 29 days, she incubates her clutch of up to a dozen eggs and, upon a synchronized hatching, leads the brood through weedy, wetland habitat in search of a protein-enriched diet of insects.

In Virginia, ring-necked ducks are more visible during spring migration flights. Pair bonding occurs as flocks stop over on ponds and lakes to rest and refuel along these long, arduous, northward treks. Silent throughout most of the year, the comical-looking, amorous drakes emit loud, coarse purrs while simultaneously nodding their heads and erecting iridescent, purplish head feathers as they compete for the attention of females.

Even if you are not into consumptive conservation, grab the binoculars in March and go for a walk along an isolated, shallow impoundment in search of ring necks. Their antics will surely put a smile on your face!

---

*A lifelong naturalist and wildlife photographer, Mike Roberts enjoys sharing his knowledge with others. You can contact him at: return2nature@aol.com.*

# WENDY HYDE

I've always loved cooking, but I didn't become a hunter until I married into a family of hunters and anglers. I've spent countless hours in the kitchen with my Southern-born and -bred mother-in-law, hunting with my husband, attending culinary classes, and experimenting at home. Now, as a Master Hunter Education Instructor with the Virginia Department of Wildlife Resources (DWR) and culinary arts instructor at a local college, I get to share both those interests.

I want to make cooking with game appealing, approachable, and attainable. Game meats become less intimidating to prepare when the cook understands the similarities to more familiar proteins. Many beef recipes are suitable for venison, goose, and duck. Chicken recipes translate to pheasant. Pork recipes often work for wild boar. Learn a few tips and techniques for handling lean meats, and you're ready to take on a world of healthy, naturally harvested foods.

Most wild duck meat is dark, rich, and fine-grained, any different species have different tastes. Much of the duck's flavor is concentrated in the fat, so cooks have a choice to make—leave the skin on or take it off? Whatever the species, duck should be cooked rare to medium-rare. Cooked longer, the meat becomes tough, which is the most common mistake and the reason many people don't like it.

To get a good sear on meat, it's important to thoroughly dry the surface. A wet surface will steam instead of sear and lose the added flavor that browning provides. Using clarified butter allows a cook to add butter flavor without burning it. Off-the-shelf butter burns at about 250°F, but when it's been simmered to remove all the water and milk solids it can handle temperatures up to 400°F. Clarified butter will last for months when refrigerated.

Sauces are a common element in waterfowl recipes and one with a combination of acid and sweetness helps balance the richness of the meat.

## Seared Duck Breasts with White Wine-Orange Pan Sauce

Serves: 4

¼ cup balsamic vinegar
2 Tbsp. honey
1/3 cup canola or other neutral oil
1 garlic clove, minced
2 Tbsp. water
4 skinless wild duck breast halves
2 Tbsp. clarified butter
Salt and freshly ground black pepper

### SAUCE

1 tsp. Dijon mustard
3 Tbsp. honey
2 Tbsp. orange juice concentrate, thawed
1 tsp. cornstarch
1 navel orange, peel cut off, sectioned to remove membrane, juices reserved
½ cup dry white wine
1 Tbsp. salted butter

Combine vinegar, honey, oil, garlic, and water in a shallow dish. Add the duck breasts and turn to coat with the marinade. Allow to sit at room temperature, covered, for about 20 minutes.

For sauce, in a small bowl whisk together the mustard, honey, juice concentrate, cornstarch, and reserved orange juice; set aside.

Remove the breasts from the marinade, pat dry thoroughly, and season with salt and pepper. Heat a medium sauté pan over medium-high heat. Add clarified butter to the pan and swirl to coat. Sear the breasts on both sides until medium-rare, about four minutes per side (internal temperature of 135°F). Transfer to a plate and lightly cover with foil. Using the same sauté pan, reduce heat to medium, add white wine, scrape to deglaze any brown bits, and simmer to reduce by half. Whisk in the sauce mixture, stirring constantly until slightly thickened. Gently stir in orange sections until warmed through then remove the pan from the heat. Slice the duck ¼" thick across the grain, divide the slices among four plates and spoon the sauce over, making sure each portion gets several orange slices.

---

*Wendy Hyde lives on the Northern Neck of Virginia with her husband and two dogs. Her recipes have been featured in* Chesapeake Style Magazine. *Find her on Instagram @girlgamechef.*

# Living Habitats

Column and photo
by Stephen Living

## Be A Good Landlord for Wildlife

Developing backyard habitat means providing the resources that various species need to make their living—food, water, shelter, and space that's properly arranged. An important aspect of this for wildlife species is ensuring that there are places to reproduce and raise young. This space looks different for different species. For many native insects, ensuring that they have access to the proper host plant on which to lay their eggs is the critical component. Other insects use hollow plant stems to hibernate or lay their eggs. Leave plant stems to stand through the winter and the pollinators will thank you. You can also provide places for native bees like orchard bees and mason bees to reproduce with bee hotels—either wooden blocks with drilled tunnels or bundles of straws or tubes.

Box turtles require access to sandy, loamy soil in a protected, sunny place where they can bury their eggs—sometimes this may be in your garden! Once the eggs are buried, they're on their own to develop and hatch. Small predators like raccoon and opossum are really good and finding these nests and digging them up. You can add a simple cage to protect the nest of your backyard box turtle (or any turtle species).

Of course, bird houses are a well-known way to provide for nesting in your yard. Bird houses are useful for species that naturally nest in tree cavities. In a wild setting, woodpeckers drill these holes, which are often adopted by a variety of other birds. But a bird house by itself won't provide all that birds need to raise a family. Be sure to provide habitat—with layers of native trees, shrubs, and herbaceous plants.

What makes a good bird house? Different species have different requirements and will need a house designed for them. Be careful if buying a bird house; many of the bird houses that are sold are NOT well designed for birds and can actually be harmful. Be careful of products that claim to be houses for species that don't cavity nest. For instance, hummingbirds won't ever use the adorable little houses seen online. If you hang "decorative" bird houses, plug up the entrances to be sure birds don't try to use them and run into trouble!

Characteristics of a well-built bird house:

- Well-constructed from untreated lumber (¾" thick or more) and rust-resistant hardware
- A sloped roof that extends over the sides, especially at the entrance
- A recessed floor with adequate drain holes
- Can be opened to clean out the box at the end of the nesting season
- Has an entrance hole appropriate for the species that you're hoping to attract (holes smaller than 1 9/16" can help prevent invasive starlings from using a box)
- Grooves or rough surface on the inside of the box to help young fledglings climb out when they're ready
- Skip the perch! Songbirds don't need the perch, and predators may use it to help get into the box

Every box needs to be mounted in the right spot. What is the right spot? Depends on the species!

Boxes for species like eastern bluebirds or chickadees are best mounted on conduit poles that make it difficult for predators to access the nest. Additional predator guards can be added to these as well. These boxes can be placed in backyards in an open spot near cover like native shrubs and other vegetation. Nest boxes for species like eastern screech owl would be mounted on mature trees 10'-30' high under a branch. Purple martins require very specialized house mounted on high poles in open areas close to water. Be sure to check the habitat and nesting requirements for the species you're interested in.

Plan now to be sure your habitat is ready for birds, bees and other critters this spring! Have your houses in place by the end of February. Don't forget that maintenance and cleaning are important for any of these; otherwise they run the risk of spreading disease or parasites.

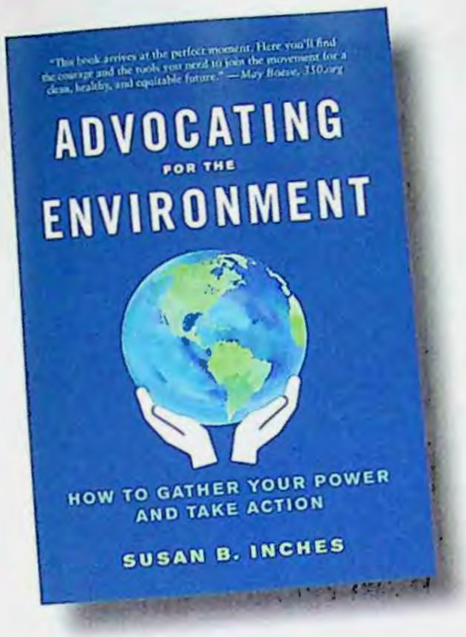
For more information:
Bird house info - *nestwatch.org/learn/all-about-birdhouses/*
Bee hotel info - *xerces.org/sites/default/files/2018-05/13-054_02_XercesSoc_Tunnel-Nests-for-Native-Bees_web.pdf*

---

*Stephen Living, the DWR habitat education coordinator, is a biologist and naturalist with a lifelong love of wildlife and nature that began in the woods and streams of his childhood.*

# GOOD READS

by Beth Hester


"This book arrives at the perfect moment. Here you'll find the courage and the tools you need to join the movement for a clean, healthy, and equitable future." —Mary Heaton, 350.org
ADVOCATING
FOR THE
ENVIRONMENT
HOW TO GATHER YOUR POWER AND TAKE ACTION
SUSAN B. INCHES

**Advocating for the Environment: How to Gather Your Power and Take Action**
by Susan B. Inches
2021 North Atlantic Books
368 pages
*northatlanticbooks.com*

*"Advocates must work with a variety of people, including those who hold different world views, in order to create policy change. The goal of environmental advocates and activists is not to condemn the views of others. It is to persuade a critical mass of people that policies that affirm life on earth are essential to our current and future well-being and should be given top priority."* – the author

When selecting a title for this issue's book review, it seemed wise to find a suitable companion book to "Speaking About the Environment: What Your Science Classes Didn't Teach You About Effective Communication," the book mentioned in the article "Communicating About Conservation: What's In It for Me?" on page 32. "Advocating for the Environment" is the perfect complement. It combines practical how-to advocacy strategies with inspiring and empowering insights that give ordinary citizens the tools they need to influence public policy, create successful campaigns, and build a more compassionate, inclusive, and environmentally sound world.

The case studies that author Susan B. Inches presents read like mini "adventures in advocacy," and they make for such a compelling read that it's hard to put the book down. They're drawn from 25 years of personal experience working in environmental policy, including 14 years as a senior official in Maine state government where she conducted research, designed and led public engagement processes, and drafted, lobbied, and passed legislation. Her extensive work portfolio includes expertise in the areas of renewable energy, energy efficiency, land use planning, the working waterfront, building and energy codes, rural development, rural broadband, and fisheries management. She currently works as a consultant, teacher, and advocate with a focus on the environment and climate change.

Her book is uplifting and ambitious. It invites readers to re-think the conscious and unconscious assumptions we hold about the natural world that influence our attitudes about, and our actions toward, the earth. In addition to concrete communication and coalition-building strategies that groups and individuals with varying levels of experience can use, Inches understands the need for activists to stay grounded, and to understand how to use personal and collective power for good. She also emphasizes the importance of cultivating optimism while not diminishing the problems faced by humanity: "You can focus on the future you want, or you can choose to focus on what's wrong in our world…there is power in choosing to be optimistic."

Equal parts history, philosophy, science, and public relations, the book is a much-needed antidote for advocacy burnout. It offers hopeful perspectives on environmental issues that give people "reasons to be optimistic in troubled times."

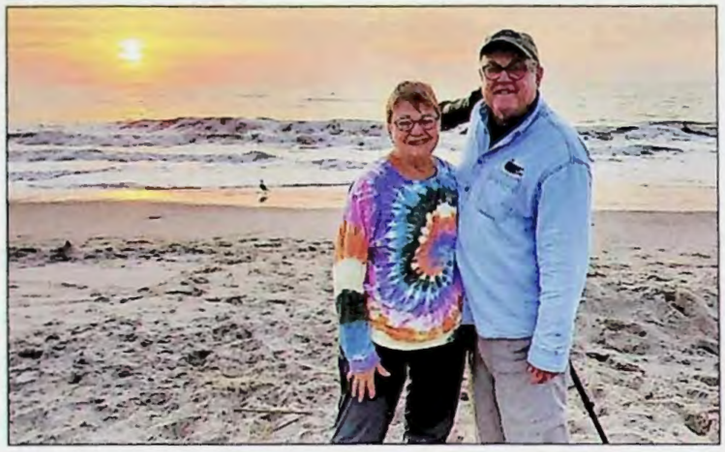
**CORRECTION**

In the article "Environmental DNA is an Exciting New Tool for Biologists" in the September/October 2022 issue of *Virginia Wildlife*, we mistakenly wrote that eDNA was sent to the National Oceanic and Atmospheric Administration's (NOAA) Northeast Fisheries Science Center to be tested, when the correct facility is the U.S. Fish and Wildlife Service's (USFWS) Northeast Fishery Center. On page 15, Christopher Rees works for the USFWS Northeast Fishery Center, not the NOAA Northeast Fisheries Science Center.

In addition, the fish on p. 12 was incorrectly identified as a gizzard shad when it is an alewife pictured. The alewife (*Alosa pseudoharengus*) is one of the Alosine species that are anadromous and the subject of restoration efforts. Gizzard shad (*Dorosoma cepedianum*) is also a forage fish, but is in the river year-round and not experiencing any population issues like the Alosines.

# Recognizing 50 Years of Freelancing!

*Talented freelance writers are one of the most valuable resources for a magazine, and Gerald Almy and Curtis Badger have been wise and entertaining contributors for* Virginia Wildlife. *In fact, 2023 marks the 50th anniversary of both Gerald and Curtis' first published articles in* Virginia Wildlife. *We asked them both to reflect on their time writing for the magazine.*



## Curtis J. Badger

My dad was an enthusiastic hunter and fisherman, so *Virginia Wildlife* magazine was a staple around our house. I grew up reading it. I went to college at Emory & Henry, then spent four years in the Air Force as a photographer. When I was discharged, I moved back to the Eastern Shore and decided to become a freelance writer and photographer. Naturally, the first magazine I targeted was the one on our coffee table, *Virginia Wildlife*. I was thrilled to have my first magazine story accepted and published. About a month after it appeared in the magazine a check for $30 arrived in the mail. I was expecting a bit more than that, but looking back at the stuff I was writing in those days, I suspect now they might have overpaid me.

One of the nicest things about writing for *Virginia Wildlife* over the years was the network of people I met—the magazine staff and fellow writers and photographers—and the opportunity to share information through the Virginia Outdoor Writers Association, which led to numerous lifetime friendships around the state.

My writing and photography skills evolved over the years, as did the magazine. *Virginia Wildlife* went from a black-and-white news magazine covering hunting and freshwater fishing, to a handsome, award-winning journal that covers the depth and breadth of Virginia's diverse natural communities. I found my niche writing about and photographing Virginia's coastal communities, examining both natural and human history of the coast. I greatly appreciate the freedom various editors have given me over the years to sometimes leave the well-trodden trail and find a direction of my own.

But the greatest moment in my *Virginia Wildlife* experience came very early in my career when I visited Spike Knuth in his office in Richmond and met the young assistant in the film library. Lynn and I will be celebrating our 42nd wedding anniversary this fall.

## Gerald Almy

After graduating from college with a degree in English, I had absolutely no idea what I wanted to do with my life. But I knew I loved good writing and also loved fishing and hunting. The career choice was clear: become an "outdoor writer." Before long I was pecking out a weekly outdoors column for a Manassas newspaper and writing a few longer pieces I hoped I could peddle to magazines.

As a native of the Old Dominion, *Virginia Wildlife* was the obvious choice, and soon my first magazine article graced the pages of our state's wildlife resources publication, purchased by editor Harry Gillam. The year: 1973. The piece described the terrific angling available for a variety of gamefish on newly built Lake Anna, where I spent many days probing shoreline cover for crappies, bluegills, bass, and stray pickerel in my jonboat.

That first published article in *Virginia Wildlife* helped me hone my writing craft and build both my confidence and savings account. It jump-started a career that saw me travel to exotic locations like Venezuela, Iceland, and the Arctic Circle gathering fishing and hunting material for magazines such as *Sports Afield* and *Field & Stream*. But probing the woods, fields, rivers, and lakes of my home state provided the bulk of my experiences, and the knowledge that I try to convey to readers while also keeping them entertained a bit, or at least prevent them from falling asleep!

Half a century later, never having held a 9-5 salaried job in my life, I am pleased to say that I am still writing for what to my mind is the greatest state conservation magazine of all—*Virginia Wildlife*.

## ATTENTION *VIRGINIA WILDLIFE* SUBSCRIBERS!

Now you are able to access your subscription online to:

- change your address
- renew your subscription
- purchase a gift subscription
- pay your bill

**To manage your subscription go to:**
*virginiawildlife.gov/subscribers*

For customer service:

- 800-710-9369
- *customerservice@vawildlifemagazineservice.com*

## 2023 *Virginia Wildlife* Photography Showcase issue

Submissions are now being accepted online!
*virginiawildlife.gov/virginia-wildlife/photo-showcase-entry/*

**DEADLINE**: Monday, February 6, 2023

## PICS FROM THE FIELD

Congratulations to **CHRIS BECK** of Lake Ridge in Prince William County for his lovely photograph of a winter white-tailed deer. No camera information was provided.

You are invited to submit up to three of your best photographs for possible publication in *Pics from the Field*. Please include contact information (email and phone number, city or county you live in) and send only high-resolution (minimum size, 4"x6" at 300ppi ) jpeg, tiff, or raw files via email attachment or WeTransfer to: Lynda.richardson@dwr.virginia.gov. We look forward to seeing and sharing your best work! HAPPY SHOOTING!

## UPCOMING EVENTS

January 14 - 15
**Virginia Fly Fishing Festival**
*vaflyfishingfestival.com*

January 20 - 22
**Richmond Fishing Expo**
*richmondfishingexpo.com*

January 28 - February 5
**Virginia Beach Winter Wildlife Festival**
*vbgov.com/government/departments/parks-recreation/special-events/Pages/winter-wildlife-festival.aspx*

Febuary 4
**Youth & Veterans Hunting Day**
*virginiawildlife.gov/hunting/youth*

February 17 -20
**Great Backyard Bird Count**
*birdcount.org*

February 24 – March 17
**Restore the Wild Art Exhibit**
Artspace, Richmond, VA

March 11
**National Archery in the Schools Program (NASP) State Tournament**
*nasptournaments.org*

# How You Can Help Wildlife

Many people think of doing plantings to benefit wildlife in the spring and summer, but there are plants and trees that provide wildlife with food and shelter even in the dead of winter. Planting these varieties can help wildlife find food to survive through the barren, cold months. In addition, if you don't dead-head or trim back native perennials, seed pods will remain on the plants that many birds will readily feed on through the winter.

**Shrubs:** Winterberry (*Ilex verticillata*), black chokeberry (*Aronia melanocarpa*), and red chokeberry (*Aronia arbutifolia*) produce fruit that many species will take advantage of in the winter.
**Evergreen trees:** American holly (*Ilex opaca*) and eastern red cedar (Juniperus virginiana) are important for providing both shelter and food for wildlife.
**Fruit trees:** American persimmon (*Diospyros virginiana*) and American crabapple (*Malus spp.*) produce edible fruits that are essential for wildlife looking to survive the winter as well as providing nesting sites for many bird species.

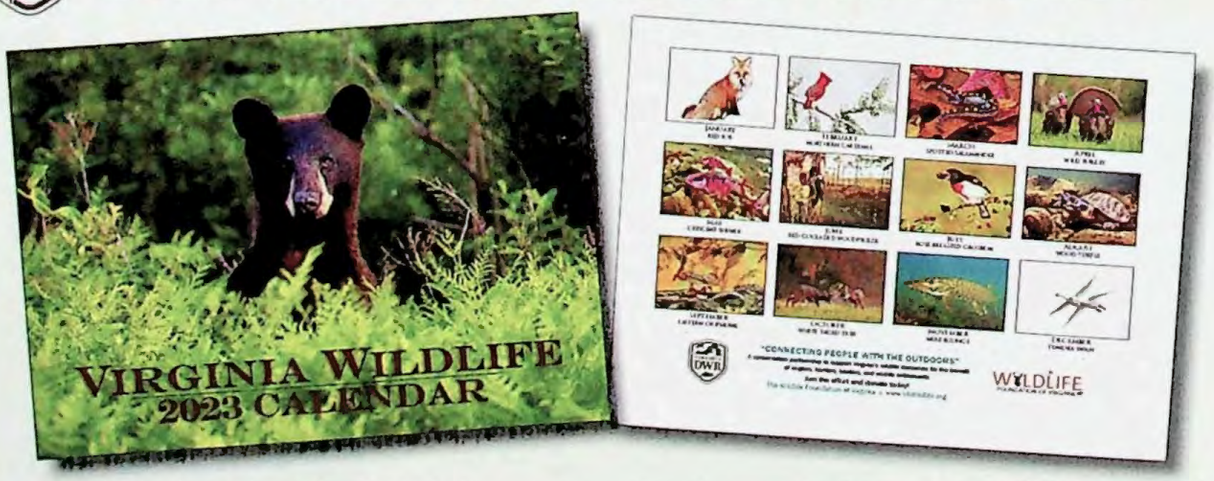
Raccoon eating persimmons

Eastern red cedar berries

Cardinal on winterberry

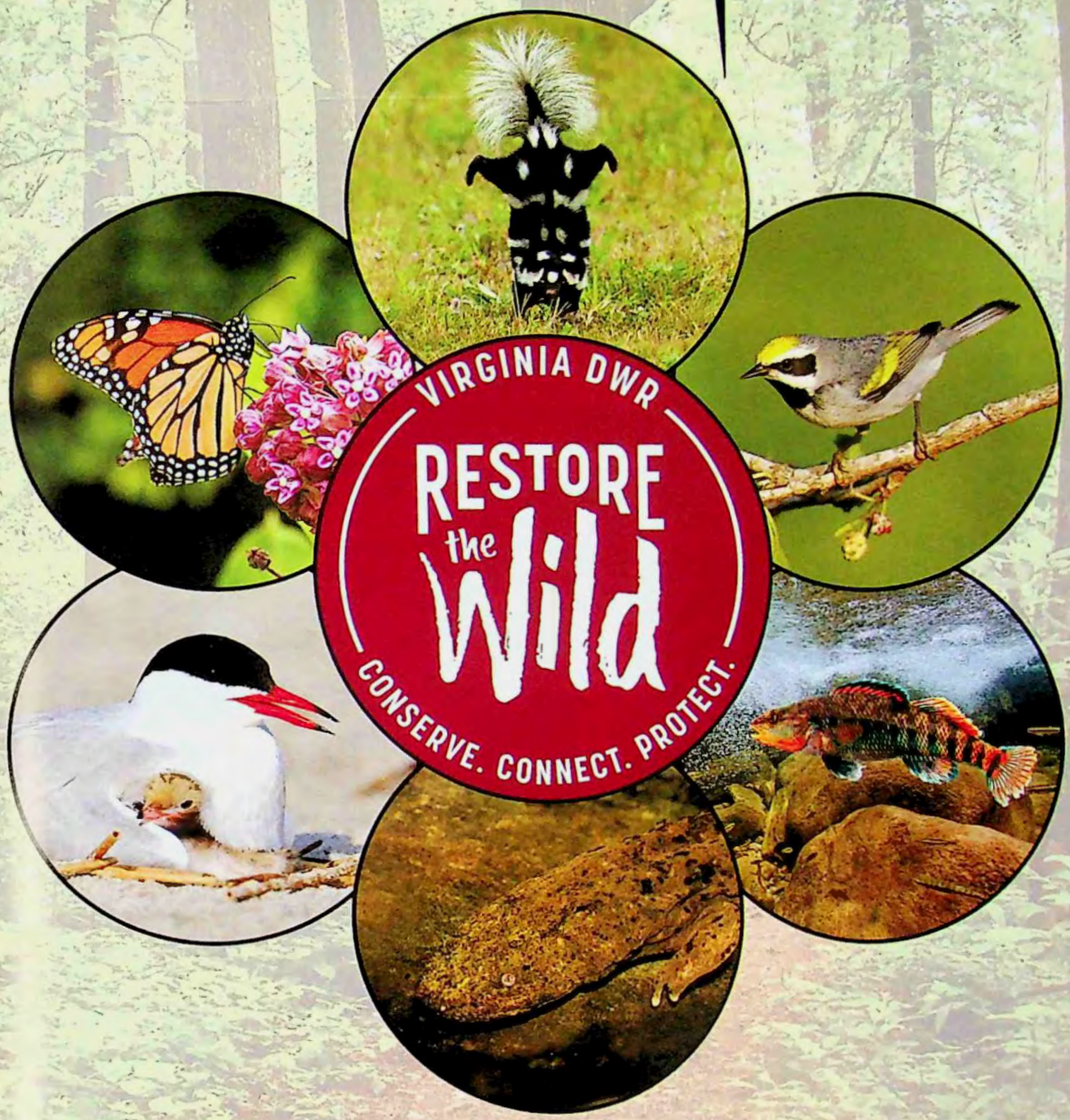
All images by Shutterstock


GIVE THE GIFT OF VIRGINIA'S WILDLIFE WITH THE
**2023 VIRGINIA WILDLIFE CALENDAR!**




For $15.95 (shipping & handling included) you get stunning photography, interesting wildlife facts, and fishing conditions. Proceeds benefit the Virginia Wildlife Grant Program, which helps connect youth to the outdoors. Visit ***virginiawildlife.gov/calendar*** to order now!

# Consider a Restore the Wild Membership!




**DWR invites all Virginians to join us in our mission to ensure wildlife has healthy places to live and thrive by becoming a Restore the Wild member. Virginia has more than 900 species of wildlife whose numbers are in decline mostly because of impacts to their natural areas that provide necessary food, water, and shelter.**

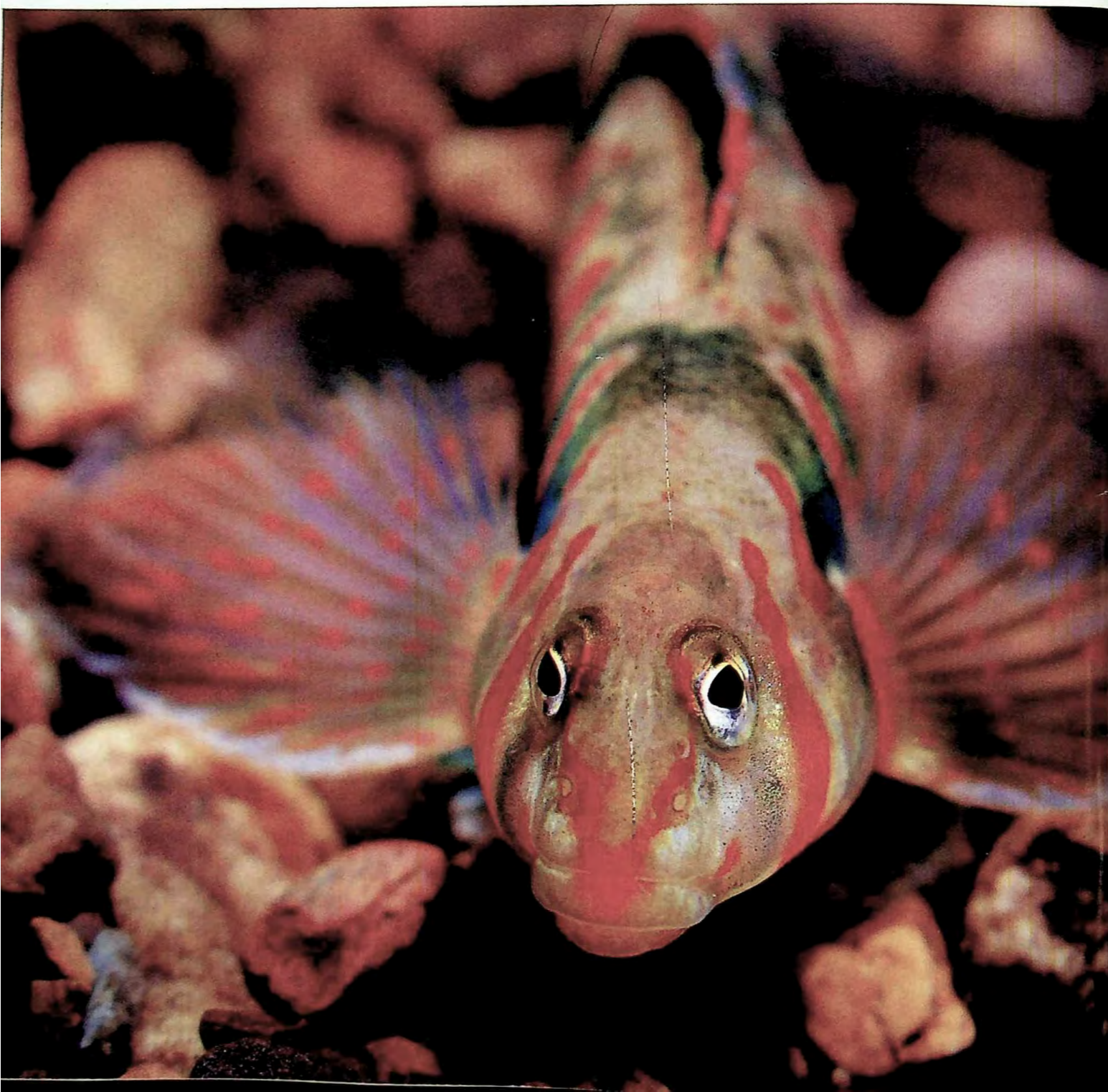
**Through your purchase of a Restore the Wild Membership, together we can ensure continuation of our conservation efforts and expand our work to keep Virginia's wild places wild.**

***virginiawildlife.gov/restore-the-wild/***

Virginia Department of
Wildlife Resources
P.O. Box 90778
Henrico, Virginia 23228

## lp Wildlife

nefit wildlife in the spring and summer, but there are plants and tr
ead of winter. Planting these varieties can help wildlife find food to
t don't dead-head or trim back native perennials, seed pods will rer
h the winter.

***
P-7 P88
17189

Magazine Subscription-related calls only 1-800-710-9369 • All other calls to (804) 367-1000 • (804) 367-1278 TTY